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Class: FYBCA (Semester – I)

Subject: US01CBCA05 (Practical Based on US01CBCA01)

ASSIGNMENT – 1

Write algorithm and draw flowchart for the following. (Logic development)

1. To buy apples.
2. To purchase a book from book shop.
3. To purchase a new vehicle.
4. To purchase shoes.
5. To purchase a railway ticket from Baroda to Delhi.
6. To get admission in a college.
7. To open a bank account.
8. To learn French language.
9. To prepare a cup of tea.
10. To prepare chapati.

ASSIGNMENT – 2

Write algorithm, Draw flow chart & write C program for the following (Simple arithmetic)

11. Read one integer number and print the value of entered number.
12. Read two integer numbers and print the value of entered numbers.
13. Read two integer numbers. Find and print sum of two numbers.
14. Read two integer numbers. Find and print difference of two numbers.
15. Read two integer numbers. Find and print product of two numbers.
16. Read one integer number and print the value of entered number by adding 5 to it.
17. Read one integer number and print the value of entered number by subtracting 10 from it.
18. Read three integer numbers and print the value after adding first two numbers and subtracting third number from it.
19. Find average of given three numbers.
20. Find average of given four numbers.
21. Find remainder of given two integer number.
Input: a = 10 b = 4 Output: 2
22. Add, Subtract, Multiply, Divide and Modulo two integer numbers.
23. Read one integer number and print the negative of entered number.
24. Read two integer numbers. Swap (Interchange) two given nos.
Input: a = 10 b = 5 Output: a = 5 b = 10

ASSIGNMENT – 3

Write algorithm, Draw flow chart & write C program for the following (Simple equation)

25. To find: $a + b - c$
26. To find: $a * b + c$
27. To find: $a * (b - c / d)$
28. To find: $a * b + c / d$
29. To find: $(a + b) * c$

30. To find: $n_1 / n_2 + n_3 / n_4$
31. To find: $a^2 + b^2$
32. To find: $a^2 - 2ab + b^2$
33. To find: $a^3 + b^4$
34. To find: $a^5 + b^4 * (a^2 / b^2 - bab)^2$
35. **Write C Program to find out solution of expression ax^2+bx+c . a, b, c and x should be entered by user.**

ASSIGNMENT – 4

Write algorithm, Draw flow chart & write C program for the following (Formula based calculation)

36. To find area of square. Formula $A = s * s$
37. To find volume of square. Formula $V = l^3$ where l is the length side of square.
38. To find area of rectangle. Formula $A = l * b$
39. To find volume of rectangle. Formula $V = l * b * h$ where l is length, b is breadth and h is height of rectangle.
40. To find Perimeter of square. Formula $L = 4*l$
41. To find Perimeter of rectangle. Formula $L = 2(l+b)$
42. To find area of triangle. Formula $A = 1 / 2 * b * h$ where b is the breadth & h is height.
43. To find area of circle. Formula $A = 3.14 * R * R$ where R is the radius of the Circle.
44. To find circumference of circle. Formula $A = 2 * \text{pie} * R$ where pie = 3.14, R is radius.
45. To find volume of circle. Formula $V = 4/3 * \text{pie} * r^3$ where pie= 22/7 and r is radius of circle.

ASSIGNMENT – 5

Write algorithm, Draw flow chart & write C program for the following (Simple calculation)

46. **To find simple interest. Hint: $SI = (P * R * N)/100$**
47. Input total number of pens and price per pen. Find and print the total bill.
48. A student is appearing in exam of three subjects. Find out total and percentage.
49. A student is appearing in exam of six subjects. Find out total and percentage.
50. Write a program to calculate customer bill. Input number of units purchased and rate per unit. Print the bill amount.
Hint: Bill amount = number of units purchased * rate per unit
51. Calculate net salary of an employee using following criteria.
Net salary = Basic salary + DA + HRA
Where DA = 70% of Basic salary and HRA = 12% of Basic salary
52. Calculate net salary of an employee using following criteria.
Net pay = Basic pay + DA + HRA + MA – IT - PF
Allowances: DA=74% of basic pay, HRA=15% of basic pay, MA=7% of basic pay
Deductions: IT=12% of basic pay, PF = 8% of basic pay
53. To find and print the net pay and gross pay from following details.
GP = Basic salary + DA + HRA (DA = 60% of Basic salary and HRA = 12% of Basic)
NP = GP – PF (PF = 4% of basic salary)
54. To calculate net salary of an employee. Input basic salary in Rs.
Net salary = Basic salary + HRA + MA – PT - IT
Allowances: MA fixed 100 - Rs. fixed, HRA is 9% of basic salary.
Deductions: Profession Tax - 80 Rs. fixed, Income Tax is 12% of basic salary.
55. Find out commission earned by a salesman.
Input salesman number, total sales (in rupees) and commission (in %).
Commission = total sales * commission (in %) / 100

ASSIGNMENT – 6

Write algorithm, Draw flow chart & write C program for the following (Simple calculation)

56. Write a C program to calculate the amount to be paid by a customer for electricity bill. Where Unit Consumed = Current meter reading – Past meter reading and

$$\text{Total Bill} = \text{Unit Consumed} * \text{Charge per unit}$$

Input: customer number, customer name, past reading (in units), present reading (in units), charge per unit

Output: (Print with same format shown here)

Electricity Bill

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-----
Customer Number      : *****
Customer Name       : *****
Past Reading        : *****
Current Reading     : *****
Units Consumed      : *****
Charge Per Unit     : ** **
Amount to be paid (Rs.) : *****.**
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57. Write a program to print customer bill. Input number of units purchased, rate per unit and discount in %. Print bill amount, discount in rupees and net bill amount.

Hint: Bill amount = number of units purchased * rate per unit

$$\text{Discount in rupees} = (\text{bill amount} * \text{discount in \%}) / 100$$

$$\text{Net bill amount} = \text{bill amount} - \text{discount in rupees}$$

58. Write a program to find out total payable bill amount for a customer.
Input: customer code, item code, unit price, quantity purchased, discount (in %)
Output: customer code, item code, unit price, quantity purchased, discount (in %), total amount, total discount (in rupees), total payable bill amount.
Note: payable amount = total amount – discount

59. Write a program to calculate bill amount for lorry driver. Input lorry number, distance in kilometer, rate per kilometer and number of days of journey. For each day driver will be given 75 rs for his own expense. Print lorry number, distance in kilometer, rate per kilometer, number of days of journey and bill amount.

Hint: Bill amount = (Distance in km * rate per km) + (number of days * 75)

60. Write a program to calculate bill for a customer. Input customer number, customer name, number of days traveled, rate per day, traveling charges per day, refreshment rate per day for driver and discount in %. Print customer number, number of days traveled, rate per day, traveling charges per day, refreshment rate per day for driver, discount in %, discount in rupees, bill amount and net bill amount.

Bill amount = (number of days traveled * traveling charges per day) + (number of days traveled * refreshment rate per day for driver)

Net bill amount = Bill amount – discount

ASSIGNMENT – 7

Write algorithm, Draw flow chart & write C program for the following (Definitions based on simple if else statement)

61. To check whether given number is zero or not. Display message “Given number is zero” if given number is zero else display message “Given number is not zero”.
62. To check whether given number is positive number or not. Display message “Given number is positive” if given number is positive else display message “Given number is not positive”.
63. To check whether given number is negative or not. Display appropriate message.

64. Check whether given number is greater than 10 or not. Display appropriate message.
65. To check whether summation of two given number is positive or not. Display appropriate message.
66. To determine whether sum of two numbers a & b is larger than double of a or not. Display appropriate message.
67. To find out largest number from given two numbers. Display appropriate message.
68. To determine whether given number is odd or even. Display appropriate message.
69. **Write C Program that will accept any year and check whether it is leap year or not.**
70. Check whether given number is divisible by 7 or not. Display appropriate message.
71. **Write C Program that read a number and checks whether the given no. is divisible by X or not. (X is any no. entered from user)**

ASSIGNMENT – 8

Write algorithm, Draw flow chart & write C program for the following (Definitions based on simple if else statement and complex condition)

72. Read 2 numbers. If both are positive then print the sum of the given numbers.
73. Input marks of 2 subjects. If both subject marks are greater than 40 then print sum of marks else display appropriate message.
74. To determine whether given no. is within the given range or not (input: no, lower range, upper range). Display appropriate message.
Input: Number = 10 Lower range = 5 Upper Range = 30
Output: 10 is within the range
Input: Number = 60 Lower range = 5 Upper Range = 30
Output: 60 is not within the range
75. Read 3 numbers. If all 3 are positive then print the sum of given numbers.
76. Read 2 numbers. If both are positive and their sum is greater than 25 then print the multiplication of given numbers.

ASSIGNMENT – 9

Write algorithm, Draw flow chart & write C program for the following (Definitions based on nested if (multiple if) statement and complex condition)

77. To determine whether given number is positive, negative or zero.
78. To find smallest from given 3 numbers.
79. To find maximum of given three numbers.
80. To find minimum of given three numbers.
81. To find minimum and maximum number from given three numbers.

ASSIGNMENT – 10

Write algorithm, Draw flow chart & write C program for the following (Definitions based on if statement and complex condition)

82. Prepare the mark sheet of a student by considering following details.
Input : Roll no, Name, Marks of 6 subject
Display Total, Percentage and Grade on the basis of following criteria.
Percentage above 75 % Grade = 'O'
68 % > per <= 75 % Grade = 'A'
60 % > per <= 68 % Grade = 'B'
48 % >= per <= 60 % Grade = 'C'
below 48 % Grade = 'F'

83. Calculate result of a student appearing in 3 subject exam using following criteria. Passing criteria is 40 marks. Maximum mark is 100 in each subject.

ATKT Fail in one of subjects

Pass class per ≥ 35 & < 48 Second class per ≥ 48 & < 60

First class per ≥ 60 & < 70 Distinction per ≥ 70

84. Write a program to enter marks of 6 subjects. Print the result as first class if percentage is ≥ 60 . Print result as second class if percentage is ≥ 48 and < 60 . Pass class if percentage < 48 and ≥ 40 . Print result as fail if student fails in all subjects. Print ATKT if student fails in 1 or 2 subject. Passing criteria is 40 marks.

85. Write a program to calculate bonus for an employee of a company.

Bonus is given on basic salary.

Display basic salary, bonus (in rupees) in the output.

Rules for calculating bonus are as follows:

Basic salary	Bonus (in %)
< 2000	5
≥ 2000 but < 5000	7
≥ 5000 but < 7000	9
≥ 7000	12

86. Write a program to calculate income tax of an employee. Criteria to calculate income tax are as follows:

	Tax
Net salary $\leq 10,000$	Nil
Net salary $> 10,000$ but $\leq 15,000$	10% of net salary
Net salary $> 15,000$ but $\leq 25,000$	15% of net salary
Net salary $> 25,000$	20% of net salary

87. Write a program to accept customer number, present reading and past reading to calculate electricity bill. Charges are as follows.

Consumption (in units)	Rate
0 – 200	0.50 per unit
201 – 400	Rs. 100 + 0.65 paise / unit in excess of 200 units
401 – 600	Rs. 230 + 0.80 paise / unit in excess of 400 units
≥ 601	Rs. 390 + 1.00 rupee / unit in excess of 600 units

88. An electric power distribution company charges its domestic consumers as follows:

Consumption Units	Rate of Charge
1-100	Rs. 0.75 per unit
101-300	Rs. 75 plus Rs. 1.00 per unit excess of 100 units
301-500	Rs. 275 plus Rs. 1.50 per unit excess of 300 units
500 and above	Rs. 575 plus Rs. 1.75 per unit excess of 500 units

Write a program that read customer number & power consumed and print the amount to be paid by the customer. Note that output should be well formatted.

89. The commission a life-insurance saleswomen earns on insurance policies sold is as follows:

Policy Amount (Rs.)	Commission
Less or equal to 10,000	$\frac{1}{2}\%$ of policy amount
Between 10,000 and 25,000	Rs.50 + 0.6% of the amount in excess of Rs. 10,000/-
Greater or equal to 25,000	Rs.140 + 0.75% of the amount in excess of Rs. 25,000

Write a program that reads the amount of insurance sold and outputs the commission due to the saleswomen.

ASSIGNMENT – 11

Write algorithm, Draw flow chart & write C program for the following (Definitions based on if statement and complex condition)

90. A company wants to give bonus to all employees. Each employee has code either 1 or 2. Bonus is given as per following rule.

Code	Bonus (in %)
1	10% of basic salary
2	20% of basic salary

Write a program to find bonus of an employee.

91. A company wants to give bonus to all employees. Each employee has code either 1, 2, 3 or 4. Bonus is given as per following rule.

Code	Bonus (in %)
1	10% of basic salary
2	15% of basic salary
3	20% of basic salary
4	25% of basic salary

Write a program to find bonus of an employee.

92. Write a program to find net monthly salary of an employee. There are two types of employees: senior and junior. Deduction for senior employee is 1000 Rs. and for junior it is 500 Rs.

Net monthly salary = basic salary – deduction

93. Write a program to calculate electricity bill. Input customer number, past reading, present reading, past reading and customer type. Customers are of two types: I (Industrial) and R (Regular). For Industrial customer rate per unit is 1 and for Regular customer rate per unit is 1.5 rs. Print the bill amount.

94. Write a program to print customer bill. Input customer number, customer name, number of items purchased, rate per item and customer type (P: Permanent and D: Daily). For permanent customer discount is 10% and for daily customer discount is 5.5%. Print customer number, customer name, number of items purchased, rate per item, customer type, bill amount, discount in rupees and net bill amount.

95. Write a program to find out the medicine bill. Input drug no, drug name, units purchased, rate per unit, packing unit (I = Injection / B = Bottle / T = Tablet) and sales tax in %. If packing unit = "I" than discount = 7.5%, else if packing unit = "B" than discount = 5%, else if packing unit = "T" than discount = 2.5%. Print all inputs, discount in rupees, sales tax in rupees, bill amount and net bill amount in attractive format.

96. Write a program to find out the commission earned by a salesman. Input salesman no, salesman name, sales amount, and salesman type (P/D/H). If salesman type = "P" than commission rate = 9%, else if salesman type = "D" than commission rate = 5%, else if salesman type = "H" than commission rate = 2%.

Output format:

Salesman report

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Salesman number  :-
Salesman name   :-
Sales amount    :-
Commission (%)  :-
Commission (Rs.) :-
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Net amount      :-
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97. An electronic component vendor supplies three products: transistors, resistors and capacitors. The vendor gives a discount of 10% on orders for transistors if the order is for more than Rs. 1000. On orders of more than Rs.100 for resistors, a discount of 5% is given, and a discount of 10% is given on orders for capacitors of value more than Rs. 500. Assume that the numeric codes 1, 2 and 3 are used for transistors, capacitors and resistors respectively. Write a program that reads the product code and the order amount and prints out the net amount that the customer is required to pay after discount.
98. A travel company offers 3 types of tours to their customers. Rules for calculating final bill amount for a customer is as follows:

Tour type	Rate / seat	Days of tour	Meal charges / person
A	5000	8	500
B	3000	6	450
C	2500	5	400

Discount:

Tour type	For Booking less than 5 seat	For Booking greater than or equal 5 seat
A	7%	12%
B	5%	9%
C	4%	7%

Note: discount is given on final bill amount.

Insurance charges are per day is 50 rs. / person for all tours. Input tour type and number of person. Calculate and print final bill amount.

ASSIGNMENT – 12

Write algorithm, Draw flow chart & write C program for the following (Definitions based on if statement and complex condition)

99. Write a program to find net salary of employee. Criteria to calculate net salary are as follows:

Employee code	DA	MA	PF	IT
1 to 5	67%	12%	10%	15%
6 to 12	62%	10%	9%	10%
13 to 15	55%	8%	8%	8%

DA, MA, PF and IT are given in percentage of basic salary.

Net salary = Basic salary + DA + MA – PF – IT

100. Write a program to calculate total salary of an employee based on following criteria:

Basic	DA	MA
>= 10,000	10%	500
>= 6,000 but < 10000	8%	300
>= 3,000 but < 6000	6%	250

Total salary = basic salary + DA + MA

101. A company wants to give bonus to employees on basis of type of employee and their basic salary. Employee type can be either 1 or 2. Bonus in percentage are as follows:

Basic salary	Type 1	Type 2
<= 5000	5% of basic salary	7%
> 5000 but <= 7000	10%	15%
> 7000 but <= 10,000	15%	25%
> 10,000	25%	30%

102. A library pays overtime to its staff as per the following schedule:

Basic salary per month	Overtime allowance
< 2500	10 Rs. per hour for first 10 hours + 7.50 Rs. per hour for hours in excess of 10, up to a maximum of Rs. 750/- per month
>= 2500 but < 3500	Rs. 15/- per hour for the first 10 hours + Rs. 10 per hour for hours in excess of 10, up to a maximum of Rs. 1250/- per month.
>= 3500	Rs. 20/- per hour for the first 10 hours + Rs. 15 per hour for hours in excess of 10, up to a maximum or Rs. 1500/- per month

Input worker's basic salary and overtime hours. Compute and print the gross salary.

103. A cloth showroom gives following seasonal discounts on purchase of items:

Purchase Amount	Discount	
	Mill Cloth	Handloom items
0-100	---	5%
101-200	5%	7.5%
201-300	7.5%	10.0%
Above 300	10.0%	15.0%

Write a program to compute the net amount to be paid by a customer.

104. A manufacturing company classified its executives into four levels for the benefit of certain perks. The levels and corresponding perks are shown below:

Levels	Perks	
	Conveyance Allowance	Entertainment Allowance
1	2000	600
2	700	400
3	400	200
4	150	---

An executive's gross salary includes basic pay, house rent allowance at 25% of basic pay and other perks. Income tax is withheld from salary on a percentage basis as follows:

Gross Salary	Tax Rate
Gross<=2000	No tax deduction
2000<Gross<=4000	3%
4000<Gross<=5000	5%
Gross>5000	8%

Write a program that will read an executive's job number, level number and basic pay and then compute the net salary after withholding income tax.

ASSIGNMENT – 13

Write algorithm, Draw flow chart & write C program for the following (Simple looping).

105. Print "Hello" 5 times.
106. Print "Friend" 10 times.
107. Print series of first 5 natural numbers. Output: 1 2 3 4 5
108. Print series of first 10 natural numbers.
109. Print squares of first 10 natural numbers. Output: 1 4 9 16..... 100
110. Print cubes of first 5 natural numbers. Output: 1 8 27 64 125
111. Print first 5 odd numbers. Output: 1 3 5 7 9
112. Print first 5 even numbers. Output: 2 4 6 8 10

ASSIGNMENT – 14

Write algorithm, Draw flow chart & write C program for the following (Simple looping and calculation).

113. Print first 5 natural numbers. Also calculate and print sum of first 5 natural numbers.
Output: 1 2 3 4 5
Sum = 15
114. Print first 5 natural numbers. Calculate and print product of first 5 natural numbers.
Output: 1 2 3 4 5
Product = 120

ASSIGNMENT – 15

Write algorithm, Draw flow chart & write C program for the following (Simple looping and calculation).

115. Print squares of first 10 natural numbers. Also calculate and print sum of squares of first 10 natural numbers.
116. Print first 10 odd numbers. Also calculate and print sum of first 10 odd numbers.
117. Print first 10 even numbers. Also calculate and print sum of first 10 even numbers.

ASSIGNMENT – 16

Write algorithm, Draw flow chart & write C program for the following (Simple looping).

118. Print series of first n natural numbers.
Input: n=7 Output: 1 2 3 4 5 6 7
119. Print squares of first n natural numbers.
120. Print cubes of first n natural numbers.
121. Print n terms of Odd numbers.
Input: n=7 Output: 1 3 5 7 9
122. Print n terms of Even numbers.

ASSIGNMENT – 17

Write algorithm, Draw flow chart & write C program for the following (Simple looping and calculation).

123. Print series of first n natural numbers. Calculate product of first n natural numbers.
124. Print series of first n even numbers. Calculate product of first n even numbers.
125. Print series of first n odd numbers. Calculate product of first n odd numbers.

ASSIGNMENT – 18

Write algorithm, Draw flow chart & write C program to print following series and sum of series upto n terms (Looping).

126. $1 + 2 + 3 + 4 + 5 = 28$ and so on = sum
Input: N = 5 Output: $1 + 2 + 3 + 4 + 5 = 15$
127. $1 + 3 + 5 + 7$ and so on = sum
Input: N = 7 Output: $1 + 3 + 5 + 7 + 9 + 11 + 13 = 49$
128. $2 + 4 + 6 + 8$ and so on = sum
129. $3 + 6 + 9 + 12$ and so on = sum

130. $5 + 10 + 15 + 20 \dots$ and so on = sum
 131. $1 + 4 + 9 + 16 \dots$ and so on = sum
 132. $1^2 + 2^2 + 3^2 + 4^2 \dots$ and so on = sum
 133. $1 + 8 + 27 + 64 + \dots$ and so on = sum
 134. $1/1 + 1/2 + 1/3 + 1/4 + \dots$ and so on = sum
 135. $1/2 + 1/4 + 1/6 \dots$ and so on = sum
 136. $1/1 + 1/3 + 1/5 \dots$ and so on = sum
 137. $1 + 1/4 + 1/9 + 1/16 + 1/25 + \dots$ and so on = sum
 138. $1/2 + 2/3 + 3/4 \dots$ and so on = sum
 139. $1/4 + 2/3 + 3/2 + 4/1 \dots$ and so on = sum
 140. $1 + x + x^2 + x^3 + x^4 + \dots$ and so on = sum

ASSIGNMENT – 19

Write algorithm, Draw flow chart & write C program to print following series and sum of series upto n terms (Looping and if statement).

141. $1 - 2 + 3 - 4 + 5 \dots$ and so on = sum
 142. $-1 + 2 - 3 + 4 - 5 + 6 \dots$ and so on = sum
 143. $-1 + 4 - 9 + 16 - 25 + 36 - \dots$ and so on = sum
 144. **Write C Program that perform and print $SUM = 1 - 1/2 + 1/3 - 1/4 + 1/5 \dots 1/n$**

ASSIGNMENT – 20

Write algorithm, Draw flow chart & write C program to print following series and sum of series upto n terms (Complex series upto n terms).

145. $1, 2, 4, 7, 11, 16 \dots$ and so on = sum
 146. $1, 2, 5, 10, 17, 26 \dots$ and so on = sum
 147. $1, 3, 7, 13, 21, 31 \dots$ and so on = sum
 148. $2, 10, 30, 68, 130 \dots$ and so on = sum
 149. $1, 3, 6, 10, 15, 21 \dots$ and so on = sum
 150. Input: $n=5$ then Output: $-4, -2, 0, 2, 4$
 Input: $n=7$ then Output: $-6, -4, -2, 0, 2, 4, 6$
 151. **Write C Program that perform and print $SUM = 1 + 2 + 6 + 24 + 120 + \dots$ up to N**
 152. Print following series.
 If $n = 7$ then output : $1 + 7 + 2 + 6 + 3 + 5 + 4 = 28$
 If $n = 9$ then output : $1 + 9 + 2 + 8 + 3 + 7 + 4 + 6 + 5 = 45$
 153. Write a program to print N terms of Fibonacci series.
 Input: $N = 9$
 Output: Fibonacci series: $1 \ 1 \ 2 \ 3 \ 5 \ 8 \ 13 \ 21$
 154. **Write C Program to print Fibonacci series : $0 \ 1 \ 1 \ 2 \ 3 \ 5 \ 8 \ 13 \dots N$**
 155. Write a program to print N terms of Fibonacci series. Calculate sum of all terms of series.
 Input: $N = 7$
 Output: Fibonacci series: $1 + 1 + 2 + 3 + 5 + 8 + 13 = 33$

ASSIGNMENT – 21

Write algorithm, Draw flow chart & write C program for the following (Looping).

156. To print first 10 natural numbers in reverse order.
 157. To print first n natural numbers in reverse order.

ASSIGNMENT – 22

Write algorithm, Draw flow chart & write C program for the following (Looping).

158. Write a program that will read 5 different numbers and print the sum of these numbers.
5 different numbers: 5, 7, 3, 2, 8
Output: Sum = 25
159. Find sum of N given numbers.
Input: n=4 and 4 different numbers: 5, 7, 3, 2
Output: Sum = 17
160. Find Average of N given numbers.

ASSIGNMENT – 23

Write algorithm, Draw flow chart & write C program for the following (Looping and if statement).

161. Find total numbers divisible by 5 from n given numbers.
162. Find total Positive, Negative & Zero nos. from n given numbers.
163. Find total Odd & Even nos. from n given numbers.
164. Write a program that will read the age of n students and then print the total number of students having age greater than 20.
165. To print sum of odd numbers and sum of even numbers separately from n given numbers.
166. To print sum of Positive numbers and sum of Negative numbers separately from N given numbers.
167. To find out smallest (minimum) number from N given numbers.
Input: n=5 and 5 different numbers: 5, 7, 3, 2, 8
Output: Smallest number = 2
168. To find out largest (maximum) number from N given numbers.
169. Find Largest & Smallest number from N given numbers.
170. Write a program to input tender number and tender amount for N tenders. Find the minimum amount from given tenders.
Input: N=3
Tender number: 1234 Tender amount: 1000
Tender number: 2345 Tender amount: 500
Tender number: 1010 Tender amount: 700
Output: Minimum tender amount: 500 Tender number: 2345

ASSIGNMENT – 24

Write algorithm, Draw flow chart & write C program for the following (Looping till user's choice).

171. Write a program that will read different numbers until user's choice and then print the sum of these numbers.
Hint: After every input, program should ask for user's choice e.g. "Do you want to input more numbers?" If user's choice is Y then repeat the input process. If user's choice is N then stop the loop.
172. Write a program that will read different numbers until user's choice and then print the sum of these numbers.
173. Write a program to read any two positive numbers say n1 & n2. Assume n1>n2. Print all even numbers that lies between n1 & n2. Also print the total number of an even numbers between n1 and n2.
Input: n1=5 n2=16 Output: 6 8 10 12 14 16

ASSIGNMENT – 25

Write algorithm, Draw flow chart & write C program for the following (Looping and Looping with if).

174. To print multiplication table for a given number.
Input: Number = 4
Output: 4 X 1 = 4
4 X 2 = 8 and so on.
175. **Write a C Program to find out the factorial of a given number.**
Input: N = 5
Output: 5! = 120 (Hint: 5! = 1 * 2 * 3 * 4 * 5)
176. To find the value of ${}^N P_R$
 ${}^N P_R = N! / (N-R)!$
177. To find out value of ${}^N C_R$.
 ${}^N C_R = N! / (R! * (N-R)!))$
178. **Write a program to input a number and check whether the number is Prime number or not.**
Hint: A prime number is a positive quantity that is divisible (without a remainder) by 1 or itself. For example, 7 is a prime number, but 6 is not a prime number.
Input: N = 7 Output: 7 is a prime number.

ASSIGNMENT – 26

Write algorithm, Draw flow chart & write C program for the following (Looping).

179. Input a number. Display all the digits of a given number separately.
Input: Number = 479
Output: 9
7
4
180. Find the sum of individual digits of given number.
Input: Number = 479 Output: 20
181. To find total number of digits of given number.
182. To find out the total number of an odd digits within the given number and print the sum of all odd digits.
Input: Number = 4791
Output: Total odd digits = 3
Sum of odd digits = 17
183. To find out the total number of an even digits within the given number and print the sum of all even digits.
Input: Number = 6149
Output: Total even digits = 2
Sum of even digits = 10
184. To find sum of odd value and even value digits of a given number..
185. **Write a program to find out the total number of an odd digits and even digits within the given number and also print the sum of all odd digits and sum of even digits.**
186. To find the sum of the square of all digits from a given positive integer.
Input: number is 4534
Output: Sum of the square of all digits = 66 (Hint: $4^2 + 5^2 + 3^2 + 4^2 = 66$)
187. To find reverse number of given number.
Input: Number = 479 Output: Reverse number = 974
188. Write a program to input a number and display the sum of digits of given number and also display the number in reverse order.

ASSIGNMENT – 27

Write algorithm, Draw flow chart & write C program for the following (Looping and if).

- 189. Write a C Program that check whether the given no. is Palindrome or not.**
Hint: A number is palindrome number if original number and reverse of that number is same.
- 190. Write C Program to find out whether entered no. is an Armstrong or not.**
Hint: The number whose sum of cube of individual digit is same as number itself. eg. $153 = 1^3 + 5^3 + 3^3$
- 191. To find given number is twin number or not.**
Hint: If summation of all the digits of a given number and product of all digits of a given number is same then given number is said to be a twin number. For e.g. 123. $1*2*3=6$ and $1+2+3=6$

ASSIGNMENT – 28

Write algorithm, Draw flow chart & write C program for the following (Looping based Advanced definitions).

- 192.** Write a C program to input one integer number from user. Find and print sum of odd value and even value digits. Also generate two new numbers form odd value digits and even value digits respectively.
Input: number = 321485
Output: sum of odd value digits = 9
sum of even value digits = 14
new number from odd value digits = 315
new number from even value digits = 248
- 193.** Find sum of odd position digit and even position digit of given number.
Input: Number = 25768
Hint: Odd position digits are 2, 7 and 8. Even position digits are 5 and 7.
Output: Sum of odd position digit = 17 Sum of even position digit = 12
- 194.** To check whether the given number is a binary number or not.
- 195.** To check whether the given number is an octal number or not.
- 196.** To convert the given decimal number into its equivalent binary number.
- 197.** To convert the given octal number into its equivalent decimal number.
- 198.** To convert the given binary number into its equivalent decimal number.
- 199.** To display prime numbers from n given numbers.
- 200.** To calculate the sum of first n prime numbers.
- 201.** Write a program to find out twin prime numbers between 1 to 1000. Twin primes are defined to be two consecutive odd numbers, which are prime. Eg. : 17 and 19 are twin prime numbers. 13 and 17 are not twin prime numbers.
- 202.** You are given two 4-digit positive integers. Write a program to calculate and print out the sum of the products of each pair of digits occupying the same position in the two numbers. For example, if first number is 3445 and second number is 4534, then output will 64 ($3*4 + 4*5 + 4*3 + 5*4 = 64$).
- 203.** Input value for total no. of rows & number of terms to be printed in each line. Print row number and total of terms of that row. At the end print grand total.
Input: No. of rows = 4 Terms = 3
Output:
- | | | |
|---|------|------------|
| 1 | 6 | (1+2+3) |
| 2 | 15 | (4+5+6) |
| 3 | 24 | (7+8+9) |
| 4 | 33 | (10+11+12) |
| | ---- | |
| | 78 | |

ASSIGNMENT – 29

Write algorithm, Draw flow chart & write C program for the following (Complex series).

204. $1 + 1/x + 1/x^2 + 1/x^3 + 1/x^4 + \dots$ and so on = sum
 205. $1! + 2! + 3! + 4! + \dots$ and so on = sum
 206. $1! - 2! + 3! - 4! + \dots$ and so on = sum
 207. **Write C Program that perform and print SUM= $x + x/2! + x/3! + x/4! + \dots + x/n!$**
 208. $x - x^3/3! + x^5/5! - x^7/7! + x^9/9! - \dots$ and so on = sum
 209. $1 + 2 + 6 + 24 + 120 + \dots$ and so on. = sum
 210. Print all odd numbers upto n. E.g. n=5 then output: 1,3,5
 211. Print all even numbers upto n. E.g. n=9 then output: 2,4,6,8
 212. Print Fibonacci series upto n. E.g. n=12 then output: 1, 1, 2, 3, 5, 8
 213. Print prime numbers upto n. E.g. n=15 then output: 1, 3, 5, 7, 11, 13

ASSIGNMENT – 30

Write C program for the following (Data validation using do while loop).

214. Input one integer number from user and print the value of given number. Validate number. Number must be positive integer. Do not allow user to proceed for displaying number until user enters valid data. Display appropriate message on inputting wrong value.
 215. Input a roll number and name of a student. Validate roll number. Roll number must be between 1 to 50. Do not allow user to proceed for name input until user enters valid data. Display appropriate message on inputting wrong roll number.
 216. Input employee code and name of an employee. Validate employee code. employee code must either 1, 2, 3 or 4. Do not allow user to proceed for name input until user enters valid data. Display appropriate message on inputting wrong employee code.

ASSIGNMENT – 31

Write C program for the following (Definitions based on switch statement).

217. Write a program to accept marks of a quiz obtained by one student. Quiz is of 10 marks. If student scores 10 / 9 / 8 / 7 mark then print the result as “excellent”. For 6 marks result is “very good”. For 5 marks result is “good”. For 4 marks result is “average”. For marks ≤ 3 result is “poor”. (Use switch statement)
 218. Write a program to read any two positive integer operands (say op1 & op2) and one character type operator (say opr). Note that opr is mathematical operator. Depending upon the operator, do the appropriate operation. e.g. if opr is '+' then the display the value obtained by evaluating the expression (op1 + op2).

ASSIGNMENT – 32

Write C program for the following. (Use Mathematical functions)

219. Find number of year, month and days from given number of days. Consider a month has 30 days and year has 365 days.
 Input: 70 Output: 0 year 2 month 10 days
 Input: 425 Output: 1 year 2 month 0 days
 220. Input x and y from user. Find x^y . (Use pow function)

221. To find compound interest. Hint: $CI = P * (1 + R / 100)^N$
222. To print "Power of 2" table for the power from 0 to 12.
Hint: $2^0, 2^1, 2^2, \dots, 2^{11}, 2^{12}$
223. Find absolute value of given integer number. (Use abs function)
224. Find absolute value of given float number. (Use fabs function)
225. Find modulo of given two floating-point number. ((Use fmod function)
226. Find square root of given number. (Use sqrt function)
227. To check whether given number is whole number or not. (Use ceil and floor function)
228. Write a program to use math functions : exp(), log()
229. To check whether the given number is a perfect square or not.
230. Write a menu driven program that will perform different mathematical operation on given data using library functions of math.h.
abs(), exp(), log(), pow() sqrt()

ASSIGNMENT – 33

Write C program for the following. (Definitions based on Character functions)

231. Write a program to read one character from keyboard and print inputted character.
(Use getchar function)
232. Check whether inputted character is alphabet or not. Print appropriate message.
233. Check whether inputted character is digit or not. Print appropriate message.
234. Check whether inputted character is either alphabet or digit (i.e. alphanumeric) or not. Print appropriate message.
235. Check whether inputted character is lowercase alphabet or not. Print appropriate message.
236. Check whether inputted character is uppercase alphabet or not. Print appropriate message.
237. Check whether inputted character is printable character or not. Print appropriate message.
238. Enter any character through keyboard, determine whether it is capital, small, digit or special character.
239. Check whether inputted character is lowercase or not. If it is lowercase convert it to uppercase letter.
240. Check whether inputted character is uppercase or not. If it is uppercase convert it to lowercase letter.
241. To check inputted character and print message as follows:
Check inputted character is printable character or not.
If no then print message "inputted character is not printable character"
If yes then again check whether it is alphanumeric or not.
If no then print message "inputted character is not alphanumeric".
If yes then again check whether it is alphabet or a digit.
If it is digit then print message "inputted character is digit".
If it is alphabet then check it is lowercase or uppercase alphabet.
In case of lowercase alphabet print message "inputted character is lowercase alphabet" else "inputted character is uppercase alphabet".
242. Write a program that read a single character and determine whether the entered character is a vowel character or not. If it is a vowel character then program should print that vowel character, otherwise display appropriate message. e.g., if entered character is 'e', then program should print 'Given character is a vowel character e'.
243. **Write C Program to perform following:**
- | | |
|---|---|
| ENTER FIRST CHARACTER: N
ENTER SENCOND CHARACTER: Y
O/P: N O P Q R S T U V W X Y | ENTER FIRST CHARACTER: Y
ENTER SENCOND CHARACTER: M
O/P: M N O P Q R S T U V W X Y |
|---|---|

ASSIGNMENT – 34

Write C program for the following. (One dimensional integer / float array and if)

244. Enter 5 elements in an integer array and print those elements.
245. Input n elements in an integer array. Print all the numbers as an output.
246. **Write a program to input n values from the user. Store them in array and print the array in reverse order.**
247. Input n elements in an integer array. Print all the numbers as an output. Also find sum of all elements.
248. Input n elements in an integer array. Print all the numbers as an output. Also find sum and average of all elements.
249. Read a floating-point array of n elements and then find mean of the elements.
Hint: Mean = (f[0] + f[1] + f[2] +...+ f[n-1]) / n
250. Enter n elements in array. Display even elements from array. Also find out the total number of even elements in the array. ,
251. Enter n elements in array. Display odd elements from array. Also find out the total number of odd elements in the array.
252. Enter n elements in array Find out the total number of even elements and odd elements in the array.
253. Enter n elements in array. Find out the total number of elements having value greater than 10.
254. Enter n elements in array. Find out the total number of elements which are divisible by 5.

ASSIGNMENT – 35

Write C program for the following. (One dimensional integer array)

255. Input n elements in an integer array a and b. Store sum of corresponding elements of both the array in third array and print third array.
256. Input n elements in an integer array a and b. Store product of corresponding elements of both the array in third array and print third array.

ASSIGNMENT – 36

Write C program for the following. (One dimensional integer array and if)

257. **Calculate the total number of zeros, positive and negative elements in an array.**
258. Input n elements in an integer array. Read a number from the keyboard and check whether the entered number is present or not in the array. If present, then also print the occurrences of an entered number.
259. Input n elements in an integer array. Input an integer. Find out how many values are greater than the given integer and how many are less than the given integer from the array.
260. A car rental company offers four types of cars for rental as follows:
Fiat (Rs. 300 per day), Ambassador Diesel (Rs. 350 per day), Ambassador Petrol (Rs. 400 per day), and Contessa (Rs. 600 per day). Accept customer number, number of days taken on rent and car type. Write a program for n customers to calculate bill amount for a customer.
261. **Write a program to accomplish the following:**
 - **Read the mark of 50 students obtained in university examination. Assume that each student can get mark between 1 to 50.**
 - **Count the number of students belonging to each of the following groups of marks:1-10, 11-20, 21-30, 31-40, 41-50**

262. Write a program to print the frequency table according to Employees Ages. Suppose ages are 51,34,56,22,42,38,30,57,19,23 then output will be

Frequency Table.

	Age	Frequency
(1)	<25	3
(2)	26-30	1
(3)	31-40	2
(4)	41-55	2
(5)	>55	2

263. Input n elements in an integer array. Find out the maximum element from the array.
 264. Input n elements in an integer array. Find out the minimum element from the array.
 265. **Write C program to find out maximum and minimum no. from given array.**
 266. Input n elements in an integer array. Find out the maximum and minimum element from the array and the difference between them.
 267. Write a program to accept n sets of tender paper numbers and the corresponding quotation amount. Print the amount of minimum quotation and the tender paper number with this quotation. Note that you have to input all set of data at a time.

ASSIGNMENT – 37

Write C program for the following. (One dimensional integer array and if)

268. Arrange the elements of an array of number in increasing order of their value.
 269. Arrange the elements of an array of number in decreasing order of their value.
 270. Arrange the elements of an array of number in increasing order of their value and then decreasing order of their value.

ASSIGNMENT – 38

Write C program for the following. (One dimensional array – advanced definitions)

271. Suppress all zero elements at the bottom of the array.
 272. Suppress all negative elements at the bottom of the array.
 273. Suppress all positive elements at the bottom of the array.
 274. Suppress all non-zero elements at the bottom of the array.
 275. Read an array of N elements .Suppress all positive then negative then zeros in the array.
 276. Input a floating number. Create two arrays one which contains all the digits of its integer part and another array that contains all the digits of its decimal part. And sum the two arrays.
 277. Given are two one-dimensional arrays A and B which are sorted in ascending order. Write a program to merge them into a single sorted array C that contains every item from arrays A and B in ascending order.
 278. Read Roll number, Gender code (1 for male, 2 for female) and marks of 3 subjects for n students. Prepare a mark sheet for each student using following rules.
- A maximum mark of each subject is 100. Passing standard is 35%.
 - If student is passing in all subjects then declare student award class.
 - Class is "PASS CLASS" if percentage is < 48.
 - If percentage is >=48 but < 60 then class is "SECOND".
 - If percentage >= 60 but < 68 then class is "FIRST".
 - If percentage >= 68 then class is "DISTINCTION".

- If student is fail only in one subject and if he/she is lacking maximum 3 marks for passing then grace will be given upto 3 marks in that subject and find class otherwise declare student have an "ATKT".
- If student is fail in more than one subject then declare result as "FAIL".
- Print total no. of pass male and female students.

ASSIGNMENT – 39

Write C program for the following. (Use string functions)

279. Input a name and print it.
280. Input a string containing multiple words and print a string. (Use gets)
281. Input a string. Find length of string.
282. Input a string. Convert all characters of string to uppercase.
283. Input a string. Convert all characters of string to lowercase.
284. Input a string. Find reverse string of given string.
285. Input a string. Check whether given string is palindrome or not. Display appropriate message.
286. Input two strings from user. Print original string. Copy first string into second string. Print both strings after performing copy operation.
287. Input two strings from user. Add second string at the end of first string. Display both string.
288. Input two strings from user. Compare two strings. If they are equal print message "both are equal". If string 1 is large, then print message "string 1 is larger" else print "string 2 is larger".
289. Input 2 strings S1 and S2. Compare whether they are equal or not. If they are not equal then append S2 in S1. Copy S1 in string S3. Print all three strings.

ASSIGNMENT – 40

Write C program for the following. (String based definitions)

290. Print the ASCII value of each character of given string.
291. **Write C Program to find out no. of occurrence of given character from a string.**
Enter string: ASASDASDASESAADA
Enter Character: A
No. of Occurrences of A is: 7
292. Input one string from user. Find total number of occurrences of given character in given string. If given character is not present in string then display message "Character not present in string".
 Input: string = Hello world character = o
 Output: Total number of occurrences of o in given string = 2
293. Calculate the total number of vowels present in given string.
294. **Input one string from user. Find total number of words in given string.**
 Input: I am student Output: 3
295. Calculate total occurrences of all the vowels from given string.
 Input: I am an Indian Output: a = 3, e = 0, I = 3 o = 0, u = 0
296. Calculate total number of capital, small and special character from the given string.
297. Write a menu driven program to input a string and perform following operations.
 1. Count total number of character
 2. Count total number of special character entered.
 3. Count total number of upper letter
 4. Count total number of lower letter
 5. Count total number of vowels
 6. Count total number of blank spaces
 7. Count total numbers of digits
298. Input a string. Convert capital letter into equivalent small letter and vice-versa.

ASSIGNMENT – 41**Write C program for the following. (String based definitions)**

- 299.** Input one string, one find character and one replace character from user. Replace all occurrences of find character with replace character in given string.
Input: string = Hello world find character = o replace character = x
Output: Hellx wxrld
- 300.** Input one string and one character from user. Generate new string after removing given character from given string.
Input: string = Hello world character = o
Output: Hell wrld
- 301.** **Write a program to remove duplicate characters from given string.**
Input: The C Programming Language
Output: The CProgaminLu
- 302.** Input one string. Extract m characters from a character string starting from the nth character and print the extracted string.
Input: string = Hello world starting position (n) = 7 number of characters (m) = 3
Output: wor
- 303.** Input a string. Find the length of the string. Add that value to each character of the string and display the resultant string.
Input : what Output: alex
Input: at Output: cv

ASSIGNMENT – 42**Write C program for the following. (Without using string functions)**

- 304.** Input a string. Find length of string.
- 305.** Input a string. Convert all characters of string to uppercase.
- 306.** Input a string. Convert all characters of string to lowercase.
- 307.** Input a string. Find reverse string of given string.
- 308.** Input a string. Check whether given string is palindrome or not. Display appropriate message.
- 309.** Input two strings from user. Print original string. Copy first string into second string. Print both strings after performing copy operation.
- 310.** **Input two strings from user. Add second string at the end of first string without using strcat function.**
- 311.** Input two strings from user. Compare two strings. If they are equal print message "both are equal". If string 1 is large, then print message "string 1 is larger" else print "string 2 is larger".
- 312.** Write a menu driven program to perform following string functions:
- | | |
|-----------------------|-------------------|
| 1. STRING LENGTH | 13. R TRIM |
| 2. STRING COPY | 14. L TRIM |
| 3. STRING COMPARE | 15. ALL TRIM |
| 4. STRING CONCATE | 16. FIND WORD |
| 5. STRING REVERSE | 17. REPLACE WORD |
| 6. STRING ENCODE | 18. DELETE WORD |
| 7. UPPER CASE | 19. INSERT STRING |
| 8. LOWER CASE | 20. WORD COUNT |
| 9. FIND CHARACTER | 21. TOGGLE WORD |
| 10. REPLACE CHARACTER | 22. EXIT |
| 11. DELETE CHARACTER | |
| 12. TOGGLE CHARACTER | |

ASSIGNMENT – 43**Write C program for the following. (String – Advanced definitions)**

- 313.** Swap even position character with odd position character in a given string.
Input: world Output: owlrd
- 314.** Find out the character having maximum ASCII value among all ASCII value of each character of the given string.
- 315.** To read the full name and convert it into short name.
Input: Kanulal Manulal shah Output: K. M. Shah
- 316.** Input one string having multiple words and a word from user. Find total number of occurrences of given word in given string.
- 317.** To find the occurrence of each alphabet in the given string.
Input: hello Output: e – 1, h – 1, l - 2, o – 1
- 318.** To print the words of string in alternate order.
Input: this is my string Output: is this string my
- 319.** Input a character array and input a number. Shift the characters from left to right to the given number of places.
Eg: Character array is : RAJESH and number is 3
Output : ESHRAJ
- 320.** Input 2 strings. Display all those characters which are common in both.
Input: string 1 = Hello string 2 = world
Output: lo
- 321.** Suppress all capital letters of given string at the end of string.
Input: Hello WoRld Output: ell oldHOWR
- 322.** Read a string having only alphabets. For each unique character in the string store the character followed by its frequency in a new string in alphabetic order. Display new string.
Input : abcdBcdcDd
Output : A1B2C3D4
- 323.** Assume that the following is a set of keywords:
{“THE”, “ARE”, “FOR”, “THIS”, “THERE”, “THOSE”, “WHAT”, “HOW”}
Write a program to do the following:
- Read any valid English language statement (in capital) which may or may not contain one or more occurrences of one or more words (belong to the given set).
 - If the entered string does not contain any words from the given set, then display message "Input String does not contain any word from the given set of words".
 - If the entered string contains one or more words from the given set of keywords, then display each word (that belongs to the given set) with their occurrences.
 - And finally print entire text after deleting keywords which occur more than once from the original text, then after the string should have only one copy of each keyword.
- Input: THE ‘C’ PROGRAMMING COMPETITION IS HELD FOR THOSE WHO ARE STUDING IN BCA. THERE ARE FOUR PROBLEMS, THE INSTRUCTIONS ARE GIVEN FOR WHAT PROCESS TO FOLLOW AND HOW TO PERFORM
- | Output : | Word | Occurrences |
|----------|------|-------------------|
| | THE | 2 |
| | ARE | 3 and so on. |
- Final string: ‘C’ PROGRAMMING COMPETITION IS HELD THOSE STUDING IN BCA. FOUR PROBLEMS, INSTRUCTIONS GIVEN PROCESS TO FOLLOW AND TO PERFORM

ASSIGNMENT – 44

Write C program for the following. (Two dimensional integer and float array)

324. Input a two dimensional integer array A and print it in a tabular form.
 325. Input a two dimensional float array A and print it in a tabular form.
 326. Input two 2-dimensional array. Find sum of the elements of array.
 327. Input two 2-dimensional array. Find multiplication of the elements of array.
 328. Write a program that read the total number of salesman (n) and total number of items to be sold (t). Then read a two-dimensional array $S_{n \times t}$, which will represent the value of each items sold by each salesman. Print it in a tabular form.
 329. The daily maximum temperatures recorded in 8 cities during six months of the year 1997 have been tabulated as follows:

Month	City-→	1	2	3	4	5	6	7	8
January		23	25	34	23	34	37	32	30
February		22	21	29	25	26	27	28	29
March		35	32	30	34	32	33	33	31
April		32	34	31	30	28	29	33	33
May		30	39	35	36	37	36	35	30
June		20	18	17	16	15	13	12	11

Write a program to read the table elements into a two dimensional array temperature, and to find the city and day corresponding to (a) the highest temperature and (b) the lowest temperature.

330. Write a program for a car company who is providing cars on rent to customers. Company is providing 4 types of car: fiat, maruti, zen and Contessa. And all these 4 cars available with or without A.C. the rates per day for each car are as follows:

	A.C.	Non A.C.
Fiat	200	100
Maruti	300	150
Zen	400	200
Contessa	500	250

Find out the bill amount for a customer who is taking the car for n number of days.

Note: to store data about rates, use 2 dimensional array.

ASSIGNMENT – 45

Write C program for the following. (Two dimensional array – matrices)

331. Input a square matrix A and print it in a tabular form.
 332. Read two square matrices A and B. Find $A + B$.
 333. Read two square matrices A and B. Find $A - B$.
 334. Read two square matrices A and B. Find $A * B$.
 Hint: Multiply values of corresponding elements in both matrices.
 335. Input a square matrix A with size 2×2 . Find $|A|$.
 Hint: $|A|$ means determinant of matrix A. For 2×2 matrix,
 $A = \begin{matrix} a & b \\ c & d \end{matrix}$ $|A| = ad - bc$
 336. Input a square matrix A with size 3×3 . Find $|A|$.
 For 3×3 matrix,
 $A = \begin{matrix} a & b & c \\ d & e & f \\ g & h & i \end{matrix}$ $|A| = a(ei - fh) - b(di - fg) + c(dh - eg)$
 337. Write a program to find the sum of each row of the $n \times n$ matrix. Store the sum of each row in single-dimensional array sum.

- 338.** Write a program to find the sum of each row of the $n \times n$ matrix and sum of each column of the $n \times n$ matrix. Store the sum of each row in single-dimensional array sumrow and sum of each column in single-dimensional array sumcol.
- 339. Write a program to find the sum of squares of elements on the diagonal of a square matrix.**
- 340.** A square matrix, that is, one having the same number of rows and columns, is called a diagonal matrix if its only nonzero elements are on the diagonal. It is called upper triangular, if all elements below the diagonal are 0, and lower triangular, if all elements above the diagonal are 0. Write a program that determines if a given square matrix is one of these matrices.
- 341.** Input a matrix A. Find the transpose matrix of the matrix A.
Hint: Rows of A becomes columns of A^T and Columns of A becomes rows of A^T .

$$A = \begin{matrix} a & b & c \\ d & e & f \end{matrix} \quad A^T = \begin{matrix} a & d \\ b & e \\ c & f \end{matrix}$$
- 342.** Check whether a given square matrix A is symmetric or not.
Hint: A symmetric matrix is a square matrix that is equal to its transpose.
- 343.** Input two matrices $A_{m \times n}$ and $B_{n \times p}$. Generate matrix $C_{m \times p}$ by applying matrix multiplication.

$$A = \begin{matrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{matrix} \quad B = \begin{matrix} 7 & 8 \\ 9 & 10 \\ 11 & 12 \end{matrix} \quad C = \begin{matrix} 1*7 + 2*9 + 3*11 & 1*8 + 2*10 + 3*12 \\ 4*7 + 5*9 + 6*11 & 4*8 + 5*10 + 6*12 \end{matrix}$$
- 344.** Write a program to print circular matrix.
For example:
- | | | | |
|-----|------------|-------------------------|---|
| N=1 | N=2 | N=3 | N=4 |
| 1 | 1 2
4 3 | 1 2 3
8 9 4
7 6 5 | 1 2 3 4
12 13 14 5
11 16 15 6
10 9 8 7 |

ASSIGNMENT – 46

Write C program for the following. (Two dimensional character array)

- 345.** Input n names of students. Store them in two dimensional character array and print all names.
- 346.** Input any string. Separate tokens (words) from given string, store them in array and print those words in separate lines.
- 347.** Input any string. Convert odd position words in uppercase and even position words in lowercase.
- 348.** Input n names form user. Sort all these names alphabetically (ascending order).
- 349.** Input n names form user. Sort all these names alphabetically (descending order).
- 350.** Read a string. Separate all words and print them. Also print each word in alphabetical order.
Input: mera bharat mahan
output: Words are :
 mera
 bharat
 mahan
 Words after sort:
 bharat
 mahan
 mera

ASSIGNMENT – 47

Write C program for the following. (User defined functions - function with argument and one return value)

- 351. To find sum of two given numbers.
- 352. To find total marks for a student appearing in exam of 3 subjects.
- 353. To find simple interest.
- 354. To find factorial of given number.

ASSIGNMENT – 48

Write C program for the following. (UDF - function with argument and no return value)

- 355. To find sum of two given numbers.
- 356. To find total marks for a student appearing in exam of 3 subjects.
- 357. To find simple interest.
- 358. To find factorial of given number.

ASSIGNMENT – 49

Write C program for the following. (UDF - function without argument and one return value)

- 359. To find sum of two given numbers.
- 360. To find total marks for a student appearing in exam of 3 subjects.
- 361. To find simple interest.
- 362. To find factorial of given number.

ASSIGNMENT – 50

Write C program for the following. (UDF - function without argument and without return value)

- 363. To find sum of two given numbers.
- 364. To find total marks for a student appearing in exam of 3 subjects.
- 365. To find simple interest.
- 366. To find factorial of given number.

ASSIGNMENT – 51

Write C program for the following. (UDF - function that return multiple values)

- 367. To find sum and difference of two given numbers.
- 368. To find total and percentage for a student appearing in exam of 3 subjects.

ASSIGNMENT – 52

Write C program for the following. (User defined functions – Advanced definitions)

- 369. Write a function that determines if a given string is a palindrome. Function return zero if given string is a palindrome else return 1.
- 370. Input one string. Write a function that extracts m characters from a character string starting from the nth character and print the extracted string.
- 371. Write a function that replaces the first occurrence of a given substring in a string by the specified substitution string.
Input: string = By the people for the people
find string = people , substitution string = citizen
Output: By the citizen for the people

ASSIGNMENT – 53**372. Write C program for the following. (Character Patterns)**

1. N= 5
 * * * * *
 * * * * *
 * * * * *
 * * * * *
 * * * * *

2. N= 5
 1 1 1 1 1
 1 1 1 1 1
 1 1 1 1 1
 1 1 1 1 1
 1 1 1 1 1

3. N= 5
 A A A A A
 A A A A A
 A A A A A
 A A A A A
 A A A A A

4. N= 5
 *
 * *
 * * *
 * * * *
 * * * * *

5. N= 5
 1
 1 1
 1 1 1
 1 1 1 1
 1 1 1 1 1

6. N= 5
 A
 A A
 A A A
 A A A A
 A A A A A

7. N= 5
 1
 2 2
 3 3 3
 4 4 4 4
 5 5 5 5 5

8. N= 5
 A
 B B
 C C C
 D D D D
 E E E E E

9. N= 5
 a
 b b
 c c c
 d d d d
 e e e e e

10. N= 5
 1
 1 2
 1 2 3
 1 2 3 4
 1 2 3 4 5

11. N= 5
 A
 A B
 A B C
 A B C D
 A B C D E

12. N= 5
 a
 a b
 a b c
 a b c d
 a b c d e

13. N= 5
 1
 1 3
 1 3 5
 1 3 5 7
 1 3 5 7 9

14. N= 5
 1
 1 4
 1 4 9
 1 4 9 16
 1 4 9 16 25

15. N= 5
 1
 1 8
 1 8 27
 1 8 27 64
 1 8 27 64 125

16. N= 5
 5
 5 4
 5 4 3
 5 4 3 2
 5 4 3 2 1

17. N= 5
 Z
 Z Y
 Z Y X
 Z Y X W
 Z Y X W V

18. N= 5
 z
 z y
 z y x
 z y x w
 z y x w v

19. N= 5
 1
 2 1
 3 2 1
 4 3 2 1
 5 4 3 2 1

20. N= 5
 A
 B A
 C B A
 D C B A
 E D C B A

21. N= 5
 a
 b a
 c b a
 d c b a
 e d c b a

22. N= 5

1	1	1	1	1
2	2	2	2	
3	3	3		
4	4			
5				

23. N= 5

A	A	A	A	A
B	B	B	B	
C	C	C		
D	D			
E				

24. N= 5

a	a	a	a	a
b	b	b	b	
c	c	c		
d	d			
e				

25. N= 5

5	5	5	5	5
4	4	4	4	
3	3	3		
2	2			
1				

26. N= 5

E	E	E	E	E
D	D	D	D	
C	C	C		
B	B			
A				

27. N= 5

e	e	e	e	e
d	d	d	d	
c	c	c		
b	b			
a				

28. N= 5

1	2	3	4	5
1	2	3	4	
1	2	3		
1	2			
1				

29. N= 5

A	B	C	D	E
A	B	C	D	
A	B	C		
A	B			
A				

30. N= 5

1	4	9	16	25
1	4	9	16	
1	4	9		
1	4			
1				

31. N= 5

5	4	3	2	1
5	4	3	2	
5	4	3		
5	4			
5				

32. N= 5

Z	Y	X	W	V
Z	Y	X	W	
Z	Y	X		
Z	Y			
Z				

33. N= 5

E	D	C	B	A
E	D	C	B	
E	D	C		
E	D			
E				

34. N= 5

5	4	3	2	1
4	3	2	1	
3	2	1		
2	1			
1				

35. N= 5

Z	Y	X	W	V
Y	X	W	V	
X	W	V		
W	V			
V				

36. N= 5

E	D	C	B	A
D	C	B	A	
C	B	A		
B	A			
A				

37. N= 5

0				
1	1			
0	0	0		
1	1	1	1	
0	0	0	0	0

38. N= 5

A				
B	B			
A	A	A		
B	B	B	B	
A	A	A	A	A

39. N= 5

*				
+	+			
*	*	*		
+	+	+	+	
*	*	*	*	*

40. N= 5

1				
0	1			
1	0	1		
0	1	0	1	
1	0	1	0	1

41. N= 5

0				
1	0			
0	1	0		
1	0	1	0	
0	1	0	1	0

42. N= 5

A				
B	A			
A	B	A		
B	A	B	A	
A	B	A	B	A

43. N= 5

				1
			1	1
		1	1	1
	1	1	1	1
1	1	1	1	1

44. N= 5

				A
			A	A
		A	A	A
	A	A	A	A
A	A	A	A	A

45. N= 5

				a
			a	a
		a	a	a
	a	a	a	a
a	a	a	a	a

46. N= 5

				1
			2	2
		3	3	3
	4	4	4	4
5	5	5	5	5

47. N= 5

				A
			B	B
		C	C	C
	D	D	D	D
E	E	E	E	E

48. N= 5

				a
			b	b
		c	c	c
	d	d	d	d
e	e	e	e	e

49. N= 5

				1
			2	1
		3	2	1
	4	3	2	1
5	4	3	2	1

50. N= 5

				1
			4	1
		9	4	1
	16	9	4	1
25	16	9	4	1

51. N= 5

				1
			8	1
		27	8	1
	64	27	8	1
125	64	27	8	1

52. N= 5

				1
			1	2
		1	2	3
	1	2	3	4
1	2	3	4	5

53. N= 5

				1
			1	4
		1	4	9
	1	4	9	16
1	4	9	16	25

54. N= 5

				1
			1	8
		1	8	27
	1	8	27	64
1	8	27	64	125

55. N= 5

				A
			B	A
		C	B	A
	D	C	B	A
E	D	C	B	A

56. N= 5

				A
			A	B
		A	B	C
	A	B	C	D
A	B	C	D	E

57. N= 5

				A
			A	C
		A	C	E
	A	C	E	G
A	C	E	G	I

58. N= 5

				Z
			Y	Z
		X	Y	Z
	W	X	Y	Z
V	W	X	Y	Z

59. N= 5

				Z
			Z	Y
		Z	Y	X
	Z	Y	X	W
Z	Y	X	W	V

60. N= 5

				Z
			Z	X
		Z	X	V
	Z	X	V	T
Z	X	V	T	R

61. N= 5

				0
			1	1
		0	0	0
	1	1	1	1
0	0	0	0	0

62. N= 5

				1
			2	2
		1	1	1
	2	2	2	2
1	1	1	1	1

63. N= 5

				A
			B	B
		A	A	A
	B	B	B	B
A	A	A	A	A

64. N= 5

				1
			0	1
		1	0	1
	0	1	0	1
1	0	1	0	1

65. N= 5

				0
			1	0
		0	1	0
	1	0	1	0
0	1	0	1	0

66. N= 5

				A
			B	A
		A	B	A
	B	A	B	A
A	B	A	B	A

67. N= 5

				0
			0	1
		0	1	0
	0	1	0	1
0	1	0	1	0

68. N= 5

				1
			1	0
		1	0	1
	1	0	1	0
1	0	1	0	1

69. N= 5

				A
			A	B
		A	B	A
	A	B	A	B
A	B	A	B	A

70. N= 5

1	2	3	4	5
	1	2	3	4
		1	2	3
			1	2
				1

71. N= 5

A	B	C	D	E
	A	B	C	D
		A	B	C
			A	B
				A

72. N= 5

Z	Y	X	W	V
	Z	Y	X	W
		Z	Y	X
			Z	Y
				Z

73. N= 5

5	4	3	2	1
	4	3	2	1
		3	2	1
			2	1
				1

74. N= 5

E	D	C	B	A
	D	C	B	A
		C	B	A
			B	A
				A

75. N= 5

Z	Y	X	W	V
	Y	X	W	V
		X	W	V
			W	V
				V

76. N= 5

1	2	3	4	5
	2	3	4	5
		3	4	5
			4	5
				5

77. N= 5

A	B	C	D	E
	B	C	D	E
		C	D	E
			D	E
				E

78. N= 5

V	W	X	Y	Z
	W	X	Y	Z
		X	Y	Z
			Y	Z
				Z

79. N= 5

				0
			1	0
		2	1	0
	3	2	1	0
4	3	2	1	0

80. N= 5

0				
1	2			
3	4	0		
1	2	3	4	
0	1	2	3	4

81. N= 5

				1
			2	3
		4	5	1
	2	3	4	5
1	2	3	4	5

82. N= 5

				1
			2	3
		4	5	0
	1	2	3	4
5	1	2	3	4

83. N= 5

1				
1	2			
2	3	3		
3	4	4	4	
4	5	5	5	5

84. N= 5

				1
			1	2
		2	3	3
	3	4	4	4
4	5	5	5	5

85. N= 5
 A
 A C
 A C E
 A C E G
 A C E G I

86. N= 5
 A
 A B
 A B E
 A B E I
 A B E I N

87. N= 5
 Z
 Z X
 Z X V
 Z X V T
 Z X V T R

90. N= 5
 A
 1 1
 B B B
 2 2 2 2
 C C C C C

91. N= 5
 A
 1 1
 C C C
 2 2 2 2
 E E E E E

92. N= 5
 A
 2 2
 C C C
 4 4 4 4
 E E E E E

93. N= 5
 A
 Z Z
 B B B
 Y Y Y Y
 C C C C C

94. N= 5
 A
 Z Y
 B C D
 X W V U
 E F G H I

95. N= 5
 +
 - -
 * * *
 + + + +
 - - - - -

96. N= 5
 1
 4 9
 4 5 6
 49 64 81 100
 11 12 13 14 15

97. N= 5
 1
 -2 -3
 4 5 6
 -7 -8 -9 -10
 11 12 13 14 15

98. N= 5
 1
 -1 -2
 2 3 4
 -3 -4 -5 -6
 5 6 7 8 9

99. N= 6
 A
 A H
 A H O
 A H O V
 A H O V A
 A H O V A H

100. N= 6
 A
 A H
 A H O
 A H O V
 A H O V C
 A H O V C J

101. N= 5
 0
 1 0 1
 2 1 0 1 2
 3 2 1 0 1 2 3
 4 3 2 1 0 1 2 3 4

102. N= 5
 1
 1 1
 1 2 1
 1 3 3 1
 1 4 6 4 1

103. N= 5
 A
 A B A
 A B C B A
 A B C D C B A
 A B C D E D C B A

104. N= 5
 Z
 Z Y Z
 Z Y X Y Z
 Z Y X W X Y Z
 Z Y X W V W X Y Z

105. N= 5

```

      A
    B  B
  C  C  C
D  D  D  D
E  E  E  E  E

```

106. N= 5

```

      Z
    Y  Y
  X  X  X
W  W  W  W
V  V  V  V  V

```

107. N= 5

```

* * * * *
*   *   *
*   *   *
*   *   *
* * * * *

```

108. N= 5

```

* * * * *
* *   * *
*   *   *
* *   * *
* * * * *

```

109. N= 5

```

      *
    * * *
  * * * * *
* * * * * * *
* * * * * * *

```

110. N= 5

```

      *
    * *
  * * *
* * * *
* * * *

```

111. N= 5

```

      *
    * * *
  * * * * *
* * * * * * *
* * * * * * *
* * * * *

```

112. N= 5

```

      *
    * *
  * * *
* * * *
* * * *

```

113. N= 5

```

* * * * *
* * * *
* * *
* * *
* * *

```

114. N= 5

```

* * * *
* * *
* * * *
* * *
* * *

```

115. N= 5

```

      1
    2  2
  3  3  3
4  4  4  4
5  5  5  5  5

```

116. N= 5

```

      1
    1  2
  1  2  3
1  1  2  3  4
1  2  3  4  5

```

117. N= 5

```

      *
     * *
    * * *
   * * * *
  * * * * *
 * * * * *
  * * * * *
   * * * *
    * * *
     * *
      *
    
```

118. N= 5

```

      * * * * *
     * * * *
    * * * *
   * * * *
  * * * *
 * * * *
  * * * *
   * * * *
    * * * *
     * * * *
      * * * *
    
```

119. N= 5

```

          a
         a b
        a b c
       a b c d
      a b c d e
    
```

120. N= 5

```

      * * * * *
     * * * *
    * * * *
   * * * *
  * * * *
 * * * *
  * * * *
   * * * *
    * * * *
     * * * *
      * * * *
    
```

121. N= 5

```

      * * * * *
     * * * *
    * * * *
   * * * *
  * * * *
 * * * *
  * * * *
   * * * *
    * * * *
     * * * *
      * * * *
    
```

122. N= 5

```

          0
         -1 0 1
        -2 -1 0 1 2
       -3 -2 -1 0 1 2 3
      -4 -3 -2 -1 0 1 2 3 4
    
```

123. N= 5

```

          A
         A * A
        A * C * A
       A * C D C * A
      A * C D E D C * A
     A * C D E D C * A
    
```

124. N= 5

```

          A
         66 67
        D E F
       71 72 73 74
      K L M N O
    
```

ASSIGNMENT – 54

Write C program for the following. (String Patterns)

If input string = "COMPUTER" then

123. C

```

C
C O
C O M
C O M P
C O M P U
C O M P U T
C O M P U T E
C O M P U T E R
    
```

124. R

```

R
R E
R E T
R E T U
R E T U P
R E T U P M
R E T U P M O
R E T U P M O C
    
```

```

125. C O M P U T E R
      C O M P U T E
      C O M P U T
      C O M P U
      C O M P
      C O M
      C O
      C
  
```

```

126.
           R E T U P M O C
         R E T U P M O
       R E T U P M O
     R E T U P M O
  R E T U P M O
  
```

If input string = "MOUSE" then

```

127.
           M O U S E
         M O U S
       M O U S
     M O U S
  M O U S
  
```

```

128. M O U S E
        M O U S
        M O U S
        M O U S
  
```

```

129. M O U S E
      M O U S
      M O U S
      M O U S
      M O U S
      M O U S
      M O U S
      M O U S
  
```

```

130. M O U S E
        M O U S
        M O U S
        M O U S
        M O U S
        M O U S
  
```

```

131. N= 5
           M O U S E
         M O U S E
       M O U S E
     M O U S E
  M O U S E
  
```

```

132. N= 5
           M O U S E
         M O U S
       M O U S
     M O U S
  M O U S
  
```

```

133. N= 5
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
  
```

```

134. N= 5
           1 2 3 4 5 4 3 2 1
         1 2 3 4 3 2 1
       1 2 3 2 1
     1 2 1
  1 1
  
```

