ITE 101 – Problem Solving Using C

Lab Cycle Sheet – I

<Specify in programs printing formats>
<Specify details for accepting input with appropriate prompts>
<Marks are awarded for look & feel of code and formatted i/o>

Simple Programs

1. Using the 'printf' function, write a program to print your name and address in two separate lines.

2. If the speed of a car is 50 kmph , what will be the time taken to cover 625 km? Code the computation in C. Print the result.

3. Write a C program to convert the given number of days into years, months and weeks.

4. Write a program to find the coupling 'C' of a directional coupler using the relation,

$$C = 10 \log \frac{P_i}{P_f}$$

Where P_i = Input power to the coupler
P_f= Power coupled in the auxiliary arm in the forward direction

5. Write a program to evaluate the following expression

$$\frac{(1.234 \times 10^{7} + 3.2 \times 10^{-3})}{(9.81 \times 10^{5} - 2.746 \times 10^{7})}$$

<say, accept numA, numB, numC, numD; and substitute in formula>

6. Write a C program to find the area of the following shapes.
<accept radius etc in float & meters; print in meters>
a) Circle
b) Square
c) Triangle

7. Write a C program to swap two numbers with the two variables.
a) using a third variable
b) without using a third variable

8. Code a program to print the memory sizes of all data types (with qualifiers) you have learnt so far.

Decision making

9. Assuming the name of a person to be 'X' write a program to read the gender and display his/her name prefixing it with Mr/Ms based on the gender.

10. Write a program to check if exactly three values are inputted and then check whether the given triangle is a valid triangle or not. (use the return value of scanf function) (Sum of 2 sides > third side)

11. Write the C code to read the (x,y) co-ordinates of a particular point and say whether it lies on the origin,X-axis, Y-axis or in any of the four quadrants. (use Nested-if blocks)

Ex. If (x,y)=(-2,3) the point lies in the 2nd quadrant .If (x,y)=(5,0), the point lies on the X-axis.

12. Calculate the telephone bill for a customer ,given the number of calls made during a particular month. Assume the minimum rental charge to be Rs.300.

Nr of calls	Charge
<100	No charge
>=100 and <200	Rs. 1 per call
>=200and <300	Rs. 2 per call
>=300	Rs. 3 per call

13. Write a program to read a candidate's age and weight and select him for the police training only if age is between 20 and 35 and weight between 55 and 70 Kg. (use logical operators)

14. Write a program to read the age of a person and decide him to be a minor or major using Conditional operator.

15. Assume two candidates A and B are contesting for an election. If a voter presses the key 'A',it infers that he has voted for the candidate A. Write a program using switch-case to count the individual number of votes for A and B and also the number of invalid votes (if some other key is pressed). Terminate the program when the user decides to quit.

16. Write a program to read an alphabet and print it in the other case.

LOOPS

17. Write a program to multiply the given two numbers by repetitive addition.

18. Implement the logic for finding the triangular number of a given number, in C.
Ex. Triangular number of 5 is 1+2+3+4+5=15.

19. Generate the multiplication table for numbers 1 to 10.

20. Write a program to display the Floyd's triangle.

1
2 3

4 5 6
7 8 9 10

21. Write a program to find the greatest and smallest 5-digit number using the given 3 digits.
Ex. If the 3 digits are 4,3,6 ,greatest 5-digit number is 66643 and smallest 5-digit number is 33346. Print the answer as a whole number.

22. Check whether the given number is an octal number or not.

23. Write a program to add the appropriate parity bit for a 4-bit binary number if even parity is followed.
If the 4-bit number is 1101, the number of 1's is 3. To make it even, the parity bit should be 1. For the number 1010, the parity bit should be 0.

24. Write a program to read a number with more than 3 digits and carry out the divisibility test for 11.
(Find the sum of the digits in even and odd locations separately. Find the difference between these two sum values. If the difference is 0,11 or multiples of 11 , then the number is divisible by 11).
Ex. N=95909 Sum of digits in odd locations=9+9+9=27
Sum of digits in even locations=5+0=5
Difference between these 2 sums= 27-5=22.
Since the difference is a multiple of 11 , declare that the number is divisible by 11.

25. Write a program to read a 'n' digit number and split it up into several 2-digit numbers starting from the right and display the sum of all those 2-digit numbers.

26. Generate all the prime numbers between the two given ranges.

27. Find the greatest and smallest number among the given 5 numbers without using '>' or '<' operators.

28. Write a program to compute sum of the following series
i) 1+2+4+7+……+ n terms
ii) 1+ 1/8 +1/27+…..

29. Write a C program to calculate the sine of an angle inputted in degrees using the formula
$x- x^3/3! +x^5/5!- x^7/7!+…..$

30. Write a program to check whether the given number is a perfect number or not.

31. Write a program to generate all the prime factors of a given number.

32. Write a program to print the following series

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  *
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*****
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  *
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