

## UE17CS151: PROBLEM SOLVING WITH C (4-0-0-4)

### WEEK 3-Control structures:-

Program 1:

Write a program to measure the time taken to execute the given program.

Program 2 :

Check whether a number is prime

- i) find # of factors - if # of factors is 2, then the number is prime
- ii) check whether any number from 2 to  $n - 1$  divides the given number
- iii) observe factors occur in pairs. start with  $i = 2$ , go until  $i * i < n$

Program 3:

Write a C program to output the following:-

Given n, For example:  $n = 4$

$1 + 2 + 3 + 4 = 10$

$1 = 1$

$1 + 2 = 3$

$1 + 2 + 3 = 6$

$1 + 2 + 3 + 4 = 10$

$1 = 1$

$1 + 2 = 3$

$1 + 2 + 3 = 6$

$1 + 2 + 3 + 4 = 10$

Program 4:

Write a C program to validate a given date; find the next date.

### Practice programs:

1. Write a C program to find a the power of m
  - i) repeated multiplication
  - ii) decrease # of multiplication by halving
    - $res = (a * a)^{(m/2)}$  if m is even
    - $a * ((a * a)^{(m/2)})$  if m is odd
2. Generate the following pattern :-

1 2 3 4 5

14 15 16 17 6

13 20 19 18 7

12 11 10 9 8