भारतीय सूचना प्रौद्योगिकी संस्थान गुवाहाटी

Indian Institute of Information Technology Guwahati

COMPUTER PROGRAMMING LAB (CS110)

ASSIGNMENT 7

1. Write a C program to print the follwing pattern (pascals triangle) n rows, where n is the input.

```
                1
              1   1
            1   2   1
          1   3   3   1
        1   4   6   4   1
      1   5   10  10  5   1
    1   6   15  20  15  6   1
  1   7   21  35  35  21  7   1
```

2. Create a C function getNthDigit(long long num, int n) that returns the n-th digit of a given long long integer num, counting from the right (0-indexed). For example, getNthDigit(12345, 2) should return 3. Handle cases where n is out of bounds.

3. Design a C function countSetBits(unsigned int num) that counts the number of set bits (1s) in the binary representation of an unsigned int without using any built-in bit counting functions. For example, if the input number is 5 then it's binary representation is 101 and the number of set bits (i.e. 1) will be 2.

4. Write a C function decimalToBinary(int decimalNum) that takes a decimal integer and prints its binary representation. The function should not return any value, only print the binary digits.

5. Implement a C recursive function printDigitsInWords(int num) that takes a non-negative integer and prints each of its digits in words (e.g., 123 $-$ $>$ "One Two Three"). Handle single-digit numbers as the base case.

6. Take n integers from the keyboard and store them in an array. The value of n should also be taken from the keyboard. Do the following operations on the array:

    i. Display all array elements in reverse order, i.e., start displaying from the last to first element.

    ii. Find the minimum element from the array and display it.

    iii. Find the maximum element from the array and display it.

    iv. Find the sum of all the even elements present in the array and display.

    v. Find the sum of the elements present in odd indices of the array and display.