INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad – 500 043

LABORATORY WORK SHEET

Date: 1/8/2022

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Exp No: 09 Experiment Name: ADDITIONAL PROGRAMS

DAY TO DAY EVALUATION:

	Preparation	Algorithm / Performance in the Lab	Source Code / Calculations and Graphs	Program Execution / Results and Error Analysis	Viva	Total
Max. Marks	4	4	4	4	4	20
Obtained	4	4	4	4	4	20

Signature of Lab I/C

START WRITING FROM HERE:

a. Write a C program to read in two numbers, x & n, & then compute the sum of this geometric progression: $1+x+x^2+x^3...+x^n$. For example: if n is 3 and x is 5, then the program computes 1+5+25+125. Print x, n, the sum. Perform error checking. For example, the formula does not make sense for (-ve) exponents if n is < 0, then go back and read in the next pair of no.'s of without computing the sum. Are any values of x also illegal? If so test them too.

```
#include<stdio.h>
#include<math.h>
void main(){
int x,n,sum=0,i;
L: printf("\n Enter the value of x and n:");
scanf("%d %d", &x, &n);
if(x<0 || n<0){
printf("\n Enter only positive value for x & n");
goto L;
}
for(i=0; i<=n; i++){
```

```
sum = sum + pow(x,i);
}
printf("\n x = %d; n = %d, sum of G.P = %d", x, n, sum);
}
```

INPUT:

Enter the value of x and n: 2 6

OUTPUT:

x=2, n=6, Sum of G.P = 127

b. Develop a C program to find the 2's complement of a given binary number 2's complement is obtained by scanning it from right to left and complementing all the bits after the first appearance of a 1. Thus, 2's complement of 11100 is 00100. Write a C program to find the 2's complement of a binary number.

```
#include<stdio.h>
void main(){
int n,i,a[10];
printf("\n Enter number of bits in the binary num:");
scanf("%d",&n);
printf("\n Enter the binary number into array:");
for(i=0; i<n; i++){
scanf("%d",&a[i]);
twocomplement(a,n);
}
void twocomplement(int a[10], int n){
int i, c=1;
for(i=0; i<n; i++){
if(a[i]==0)
a[i]=1;
else a[i]=0;
}
printf("\n Ones complement of the binary num:");
for(i=0; i<n; i++)
printf("%5d",a[i]);
for(i=n-1; i>=0; i--){
```

```
a[i]=a[i]+c;
if (a[i]==1){
c=0;
break;
}
else{
a[i]=a[i]-2;
c=1;
}
}
```

INPUT:

Enter number of bits in the binary num: 5

OUTPUT:

Enter the binary number into array: 11010

One's complement of the binary num 00011

C. Develop C program to convert a Roman numeral to its decimal equivalent. Eg: check for the inputs - Roman number IX is equivalent to 9 and Roman number XI is equivalent to 11.

```
#include<stdio.h>
#include<string.h>
void main(){
char a[10];
int total[10],sum=0,i,l;
printf("\n Enter a roman number:");
gets(a);
l=strlen(a);
for(i=0;i<l,i++){
switch(a[i]){
case 'm' : total[i]=1000;
break;
case'n': total[i]=500;
break;
case'c': total[i]=100;
break;
case'l': total[i]=50;
break;
case'x': total[i]=10;
break;
```

```
case'1': total [i] = 1;
break;
}
sum = sum + total [i];
}
for(i=0; i<L-1; i++){
if (total [i]<total [i+1]){
sum = sum - 2*total [i];
}
printf ("\n The decimal equivalent %d", sum);
}
}
```

INPUT: Enther the roman number :XL

OUTPUT: The decimal equivalent 400

✓ 27/7/22