INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad – 500 043

LABORATORY WORK SHEET

Date: 11/07/2022

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Exp No: 06 Experiment Name: FUNCTIONS

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. Design and develop a recursive & non-recursive function FACT(num) to find the factorial of a number, n!, defined by FACT(n)=1, if n=0, otherwise FACT(n)=n*FACT(n-1). Using this function, write a C program to compute the binomial co-efficient. Tabulate the result for different values of n & r with suitable message.

```
#include<stdio.h>
#include<conio.h>
int factorial(int n);
float binomialcoeff(const float n, const float r);
main(){
int n, r, fact;
clrscr();
printf("Enter the value of n & r:");
scanf("%d %d", &n, &r);
printf(" Factorial of %d = %d", n, factorial(n));
printf("\n Binomial coefficient = %f", binomialcoeff(n,r));
}
```

```
int factorial(int n){
if(n<=0)
return 1;
else
return n*factorial(n-1);
}
float binomialcoeff(const float n, const float r){
return factorial(n)/(factorial(r)*factorial(n-r));
}
```

INPUT: Enter the value of n & r: 6 3

OUTPUT: Factorial of 6 = 720
Binomial coefficient = 20.000000

b. Design and develop a recursive function GCD(num1,2) that accepts two integers arguments. Write a C program that invokes this function to find the greatest common divisor of two given integers.

```
#include<stdio.h>
int gcd(int m,int n){
if(n==0)
return m;
else
gcd(n,m%n);
}
void main(){
int a,b,g,l;
printf("\nEnter a:");
scanf("%d",&a);
printf("\n Enter b:");
scanf("%d",&n);
g=gcd(a,b);
l=(a*b)/g;
printf("\n GCD of %d and %d: %d",a,b,g);
}
```

INPUT: Enter a: 6
Enter b: 24
OUTPUT: GCD of 6 and 24 is 6.

c Design and develop a recursive function FIBO(num) that accepts an integer argument. Write a C program that invokes this function to generate the Fibonacci sequence upto num.

```
#include <stdio.h>
void fib(int);
void main(){
int n;
printf("\n Enter the limit of the series:");
scanf("%d", &n);
fib(n);
}
void fib(int n){
int x=0, y=1, z, i;
printf("%5d %5d", x, y);
for(i=2; i<n; i++){
z=x+y;
printf("%5d", z);
x=y;
y=z;
}
}
```

INPUT:
Enter the limit of the series :5

OUTPUT:
0 1 1 2 3

d. Design and develop a C function ISPRIME(num) that accepts an integer argument and return 1 if the argument is prime, 0 otherwise. Write a C program that invokes this function to generate prime no.'s between the given range.

```
#include <stdio.h>
#include <conio.h>
int isprime(int);
main(){
int num, res, a, b, i, f=0;
printf("\n Enter the range of integers to generate prime");
scanf("%d %d", &a, &b);
for(i=a; i<=b; i++){
res = isprime(i); }
printf("\t %d", i);
```

```
f=1;
}
}
if(f==0) printf("No prime no's exist\n");
}
int isprime(int n){
int j;
for(j=2;j<=n/2;j++){
if(n%j==0)
return 0;
}
return 1;
}
```

INPUT:

Enter the range of integer to generate prime: 1 10

OUTPUT:

2 3 5 7

d. Design and develop a function REVERSE(str) that accepts a string arguments. Write a C program that invokes this function to find the reverse of given string.

```
#include<stdio.h>
#include<string.h>
void Reverse();
int main(){
printf("Enter a sentence");
Reverse();
return 0;
}
void Reverse(){
char c;
scanf("%c",&c);
if(c!='\n'){
Reverse();
printf("%c",c);
}
}
```

INPUT: Enter a sentence: Computer Programming

OUTPUT: gnimmargorP retupmoC