CSE 115 Lab on functions

1. C program illustrating the difference between void and non-void function:

```
#include <stdio.h>
// definition of a non-void function
float computeSquare(float x)
{
    return x*x;
}

// definition of a void function
void printCube(float x)
{
    printf("Cube = %f", x*x*x);
}
```

```
//main function
void main()
{
    float m, n;
    printf("\nEnter a number: ");
    scanf("%f", &m);
//call computeSquare function on m
    n = computeSquare(m);
    printf ("Square = %f", n);
//call printCube function on m
    printCube(m);
}
```

2. C program to determine if a given number is odd/even using function

```
#include <stdio.h>
void oddEven(int x)
{
    if(x%2==0) printf("Even");
    else       printf("Odd");
}
```

```
void main()
{
    int m;
    printf("\nEnter an integer: ");
    scanf("%d", &m);
    oddEven(m); //function call
}
```

Try yourself2: Write C program using a function to check if a given number is positive, negative, or zero.

3. C program to determine if a given number is prime using function

```
#include <stdio.h>
int isPrime(int x)
{
    int i;
    for(i=2;i<=x/2;i++)
    {
        if(x%i==0)
            return 0;
    }
    return 1;
}
```

```
int main()
{
    int m;
    printf("\nEnter an integer: ");
    scanf("%d", &m);
    int n = isPrime(m);
    if(n==0)
       printf("Not prime")
    else
       printf("Prime");
}
```

Try yourself 3: Write C program using a function to check if a given number is a perfect number.

4. C program to compute sum of all natural numbers between m and n (using function)

```
#include <stdio.h>
int sum(int m, int n)
{
    int i, sum=0;
    for(i=m;i<=n;i++)
    {
        sum+=i;
    }
    return sum;
}
```

```
int main()
{
    int n;
    printf("\nEnter 2 integers: ");
    scanf("%d%d", &m, &n);

    int s = sum(m,n);
    printf("sum=%d",s)
}
```

5. C program to compute the integer resulting from rounding a number n (using function)

```
#include <stdio.h>
int round1(float n)
{
    int i=n;  //integer part of n
    if(n-i>=0.5) return i+1;
    else return i;
}
```

```
int main()
{
    float n;
    printf("\nEnter a number: ");
    scanf("%f", &n);

    int s = round1(n);
    printf("%d",s)
}
```

Exercise:

1. **Write a C program using 3 functions to compute diameter, circumference and area of a circle whose radius is given by the user as the input.**
2. **Find the sum of the following series using a function: $1^2 + 2^2 + 3^2 + \ldots + N^2$**

Assignment:

1. **Find the sum of the following series using user-defined function: 1/1! + 2/2! + 3/3! + …… +1/N!**
2. **Write a C code using functions that takes two integers: a and b as inputs and returns the value of a^b.**
3. **Compute the sum of the following geometric progression using a function with 2 parameters r and n:**

   $1 + r + r^2 + \ldots + r^n$ (read the values of r and n from user)

4. **Write a C program that reads an integer and returns the reverse of that number using function.**
5. **Write a C program using function that reads a floating point number n and an integer d and then prints the rounded value of n up to d decimal places. E.g. for n=5.678 and d = 2; it should print 5.68**