CL-118

Lab 07

Programming Functions In C

Fundamentals

NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES

LAB 07(FUNCTIONS)

Objective:

1. **Functions in C programming**
2. **Types of functions**
3. **Function Declaration,Call and Definition**
4. **Function types on the basis of argument lists and return value.**

1. Functions in C programming and its importance

What is Function?

A function is a group of statements that perform a specific task. In C,every program has at least one function, which is called **main().**

Advantages of Functions:

The advantages of using functions are:

- Avoid repetition of codes.
- Increases program readability.
- Divide a complex problem into simpler ones.
- Reduces chances of error.
- Modifying a program becomes easier by using functions.

2. Types of functions

- **Predefined standard library functions :**Standard library functions are also known built-in functions. Functions such as puts(), gets(), printf(), scanf() etc are examples of build in functions.
- **User Defined functions:**The functions that are created by a user in a program are known as user defined functions

3. Function declaration,Call and definition:

- **Function declaration:** A function must be declared globally in a c program to tell the compiler about the **function name**, **function parameters**, and **return type**

  Syntax:return_type function_name (argument list);

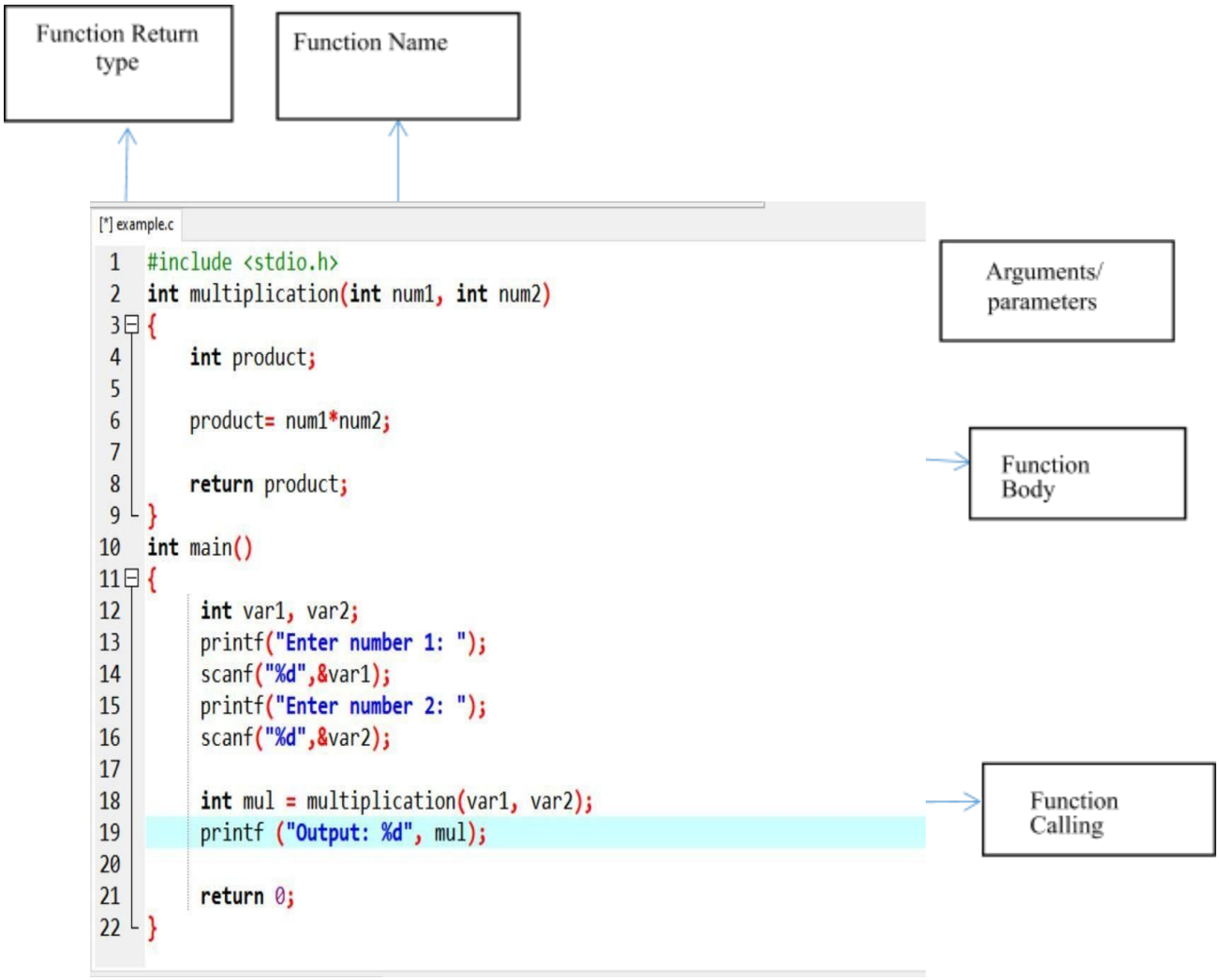
- **Function call** :Function can be called from anywhere in the program. The parameter list must not differ in function calling and function declaration. We must pass the same number of arguments as it is declared.

  Syntax:function_name(argument list);

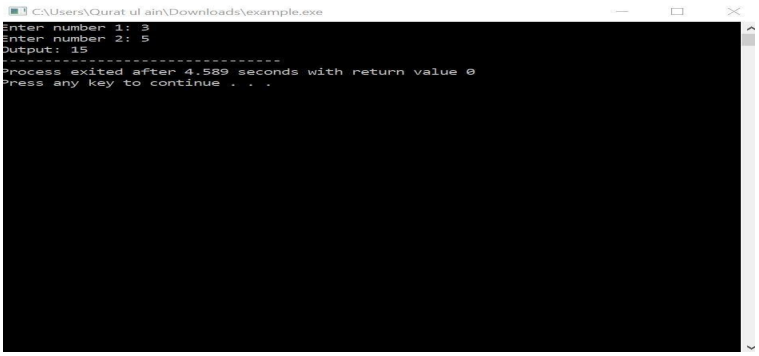
- **function definition:** It contains the actual statements which are to be executed.

  Syntax:return_type function_name (argument list) {function body;}

Example of a User defined function:



Output:

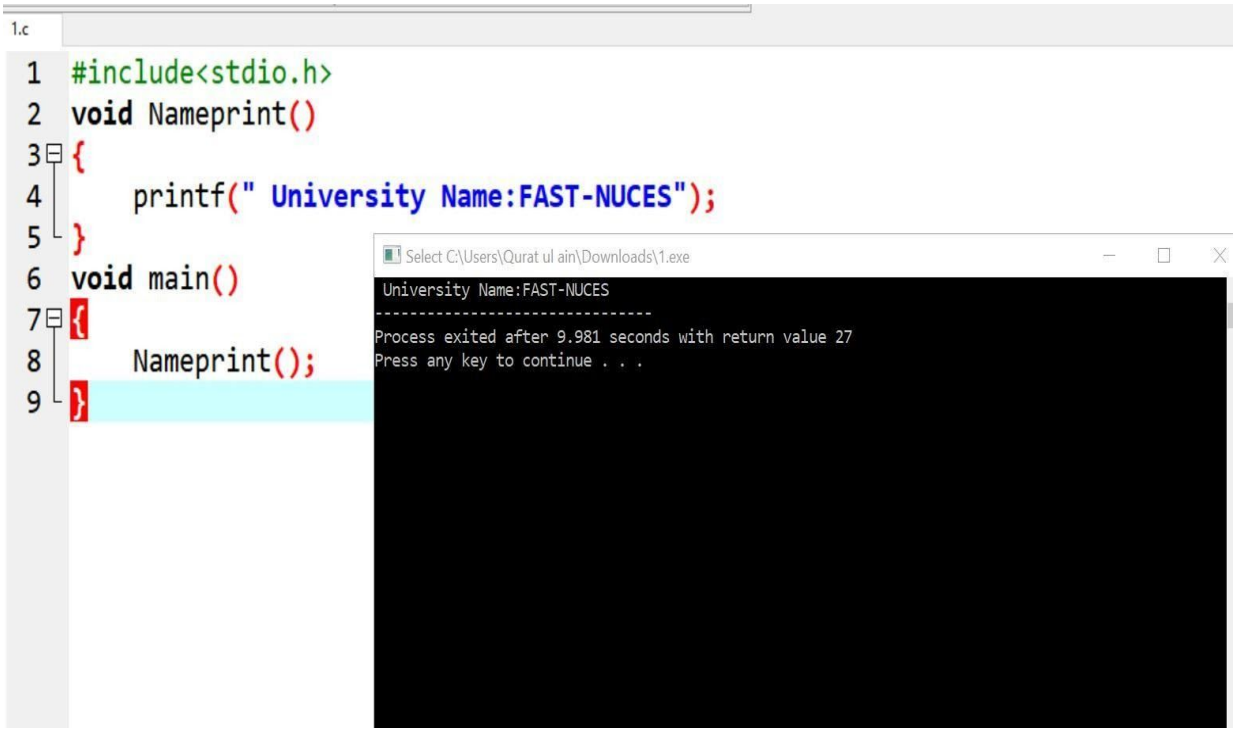


4. Function types on the basis of argument lists(parameters)and return value:

These are the following 4 possibilities.

- function without arguments and without return value
- function without arguments and with return value
- function with arguments and without return value
- function with arguments and with return value

Example for Function without argument and return value:



Example for Function without argument with return value

1.c

```c
#include<stdio.h>
int increments()
{
    int x=30;
    int y=x++;
    printf("Now value of y after post increment %d \n",y);
    int z=++x;
    printf("Now value of z after pre increment %d \n",z);
}
int main()
{
    int c=increments();
    return c;

}
```

```
Select C:\Users\Qurat ul ain\Downloads\1.exe
Now value of y after post increment 30
Now value of z after pre increment 32

--------------------------------
Process exited after 9.706 seconds with return value 39
Press any key to continue . . .
```

Example for Function argument without return value:

```c
#include <conio.h>
 void minimum(float x,int y)
 {
    if(x<y)
    {
        printf("minimum number is %d",x);
    }
    else
    {
        printf("minimum number is %d",y);
    }
 }
 void main()
 {
    float x=12.5;
    int y=12;
    minimum(x,y);
 }
```

```
Select C:\Users\Qurat ul ain\Downloads\1.exe
minimum number is 12
--------------------------------
Process exited after 10.19 seconds with return value 20
Press any key to continue . . .
```

Example for Function with argument with return value:

[*] 1.c

```c
#include <conio.h>
 int sumofarray(int a[],int n)
 {
    int i,sum=0;

    for(i=0; i<n; i++)
    {
        sum+=a[i];

    }
    return sum;
 }
int main()
{
    int a[1000],i,n,sum;

    printf("Enter size of the array : ");
    scanf("%d", &n);

    printf("Enter elements in array:\n");
    for(i=0; i<n; i++)
    {
        scanf("%d",&a[i]);
    }

    sum=sumofarray(a,n);
    printf("sum of array is :%d",sum);

```

```
C:\Users\Qurat ul ain\Downloads\1.exe
Enter size of the array : 4
Enter elements in array:
1
2
5
8
sum of array is :16
--------------------------------
Process exited after 25.81 seconds with return value 19
Press any key to continue . . .
```

1.c

```c
#include<stdio.h>
int minimum(float x, int y)
{
    if(x<y)
    {
        return x;
    }
    else
    {
        return y;
    }
}
int main()
{
    float x=12.5;
    int y=12;
    int min=(x,y);
    printf("Minimum number is:%d",min);
    return min;
}
```

```
C:\Users\Qurat ul ain\Downloads\1.exe
Minimum number is:12
--------------------------------
Process exited after 10.19 seconds with return value 12
Press any key to continue . . .
```

Tasks for lab07:

Question no 1:
Write a function named as **Revers_of_String** in c that returns the reverse of string.

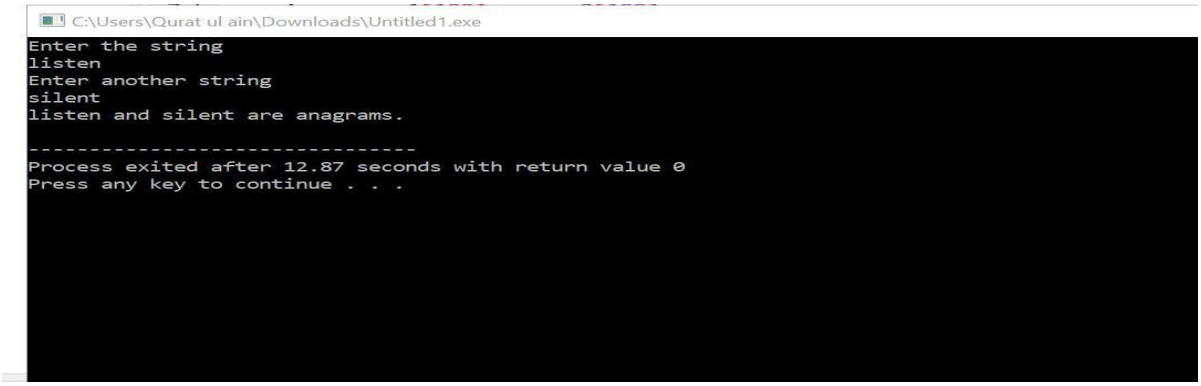
Question no 2:
By using the previous function **Revers_of_String ,**check if the given string is palindrome or not.

Hint:

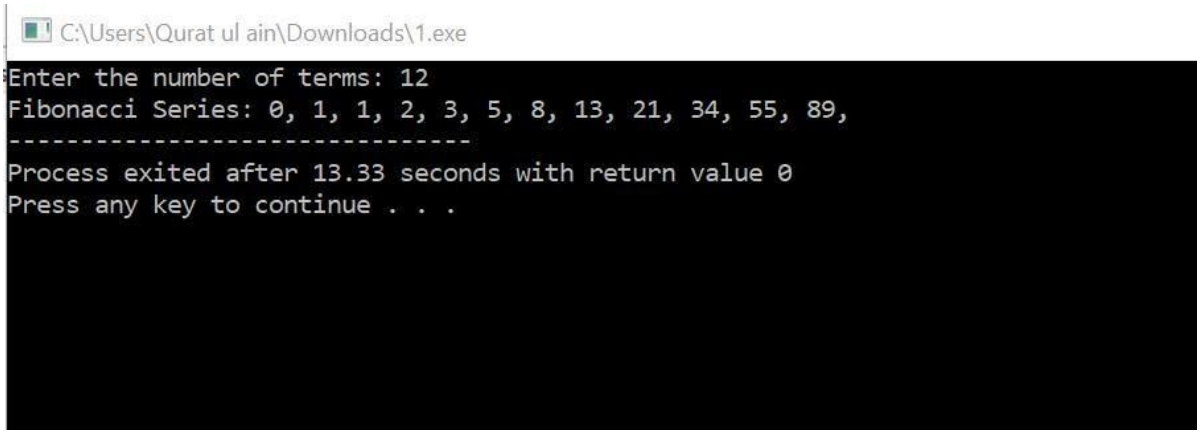
A string is said to be palindrome if reverse of the string is same as string. For example, ‘abba’ is palindrome, but ‘abbc’ is not palindrome.

Question no 3:
Write a program in C to get the largest and shortest element of an array using the function**.**

Question no 4:
Write a function in C to check whether two given strings are an anagram.



Question no 5:
Write a function to generate the following output.



Question no 6:
Write a function that takes arrays of students' marks in each class in each course as input parameters and calculates the average of marks per course.
Consider you have 5 courses and in each course 20 students are enrolled.

Question no 7:
Write a function that takes the starting and ending range from the user as input parameters and display factors of 3 and also returns the total count of factors within a given range.

Question no 8:
Write a C program in which function find the eligibility of admission for a professional course based on the following criteria:
Marks in Maths
>=65 Marks in Phy
>=55 Marks in
Chem>=50
Total in all three subject
>=180 or
Total in Math and Physics >=140

Question no 9:
Write a function in C that accept a coordinate point in a XY coordinate system and determine in which quadrant the coordinate point lies
.