جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

كلية العلوم

قسم الأمن السيبراني

Lecture: 4

The function

Subject: Structured Programming
First Stage
Lecturer: Asst. Prof. Dr. Ali Kadhum Al-Quraby

Ex 6:

- Write a C++ program do swap between two integer numbers.

```
#include <iostream.h>
// Function prototype (declaration)

void swap(int,int);
void main()
{
    int a,b;
    cout<<"Enter value of a:";
    cin>>a;
    cout<<"Enter value of b:";
    cin>>b;
    cout<<"Before swapping";
    cout<<endl;
    cout<<"a="<<a<<endl;
    cout<<"b="<<b;
    // Function call

    swap(a,b);
}
// Function definition

void swap(int a1,int b1)
{
    b1 = a1 + b1;
    a1 = b1 - a1;
    b1 = b1 - a1;
    cout<<endl;
    cout<<"After swapping";
    cout<<endl;
```

Output

```
Enter value of a:40
Enter value of b:3
Before swapping
a=40
```

```
    cout<<"a = "<<a1<<endl;
    cout<<"b = "<<b1;
}
```

Ex 7:

- Write a C++ program to print the square of numbers.

```
#include<iostream.h>

#include<conio.h>

// Function prototype (declaration)

void square (int);

void main ()

{

        int max;

        cout<<"Enter a value for number:";

        cin>>max;

        cout<<"\n";

        for (int i=1; i<=max; ++i)

        {

                // Function call

                square (i);

        }
```

Output

```
Enter the value for number:4

The square for 1  is:1

The square for 2  is:4
```

```
        getch();
}
// Function definition
void square(int n)
{
        int value;
        value=n*n;
        cout<<"The square for "<<n<<"  is:"<<value<<endl;
}
```

Ex 8:

- Write a C++ program to check whether the number is odd or even.

```
#include <iostream>
// Function prototype (declaration)
void odd_even(int n);
int main()
{
        int number;
        cout << "Enter Value: ";
        cin >> number;
        // Function call
        odd_even(number);
```

Output

```
Enter Value: 11
```

```
        return (0);
}

// Function definition

void odd_even(int n)
{
        if (n%2==0)
        {
                cout << n << "  is Even";
        }
        else
        {
                cout << n << "  is Odd";
        }
}
```

Ex 9:

- Write a C++ program to display the adding of two integers using function.

```
#include<iostream>

#include<conio.h>

// Function prototype (declaration)

void add_two_numbers (int, int);

int main ()
```

Output

```
Enter the first number:
10
Enter the second number:
```

```
{
        int num1, num2;
        cout<<"Enter the first number:";
        cout<<endl;
        cin >> num1;
        cout<<"Enter the second number: ";
        cout<<endl;
        cin >> num2;
                // Function call
        add_two_numbers (num1, num2);
        return (0);
}
// Function definition
void add_two_numbers (int a, int b)
{
        cout<<"The sum is:"<<a + b;
}
```

4. Functions with parameters and with a return value

In this type of function, the calling function passes the parameter to the called function and called function to send back value to the calling function(main program).

Ex 10:

- Write a C++ Program to find the square of several numbers using function.

```
#include <iostream.h>

// Function prototype (declaration)

int square (int);

void main()

{

    int i,max,value;

    max=4;

    i=0;

    while (i<=max)

    {

        // Function call
```

Output

```
i= 0 the square is=0
i= 1 the square is=1
i= 2 the square is=4
```

```
            value=square(i);
            cout<<"i="<<i<<"the square is="<<value<<endl;
            i=i+1;
        }
}
// Function definition
int square(int n)
{
        int result;
        result=n*n;
        return (result);
}
```

Ex 11:

- Write a C++ program to perform addition subtraction multiplication division of two numbers.

```
#include <iostream.h>
// Function prototype (declaration)
float add(float,float);
float sub(float,float);
```

Output1

```
Enter the first number:13
Enter the second number:2
Study Year: 2023-2024
Enter the choice(1=add.,2=sub.,3=mult.,4=div.):4
```

```
float mult(float,float);

float div(float,float);

 void main()

{

        int i;

        float num1,num2,result=0;

        cout<<"Enter the first number:";

        cin>>num1;

        cout<<"Enter the second number:";

        cin>>num2;

        cout<<"Enter the choice(1=add.,2=sub.,3=mult.,4=div.):";

        cin>>i;

        if (i==1)

        {

                // Function call

                result=add(num1,num2);

        }
```

Output2

```
Enter the first number:12

Enter the second number:3

Enter the choice(1=add.,2=sub.,3=mult.,4=div.):1
```

Output3

```
Enter the first number:5

Enter the second number:8

Enter the choice(1=add.,2=sub.,3=mult.,4=div.):2
```

```
else if(i==2)
{
        // Function call
        result=sub(num1,num2);
}
else if(i==3)
{
        // Function call

        result=mult(num1,num2);
}
else if(i==4)
{
        // Function call
        result=div(num1,num2);
}
else
```

```
        {
                cout<<"Error!!!";
                cout<<endl;
        }
        cout<<"The result is:"<<result;
}
// Function definition
float add(float n1, float n2)
{
        float r;
        r=n1+n2;
        return (r);
}
// Function definition
float sub(float n1, float n2)
{
        float r;
```

```
        r=n1-n2;
        return (r);
}
// Function definition
float mult(float n1, float n2)
{
        float r;
        r=n1*n2;
        return (r);
}
// Function definition
float div(float n1, float n2)
{
        float r;
        r=n1/n2;
        return (r);
}
```