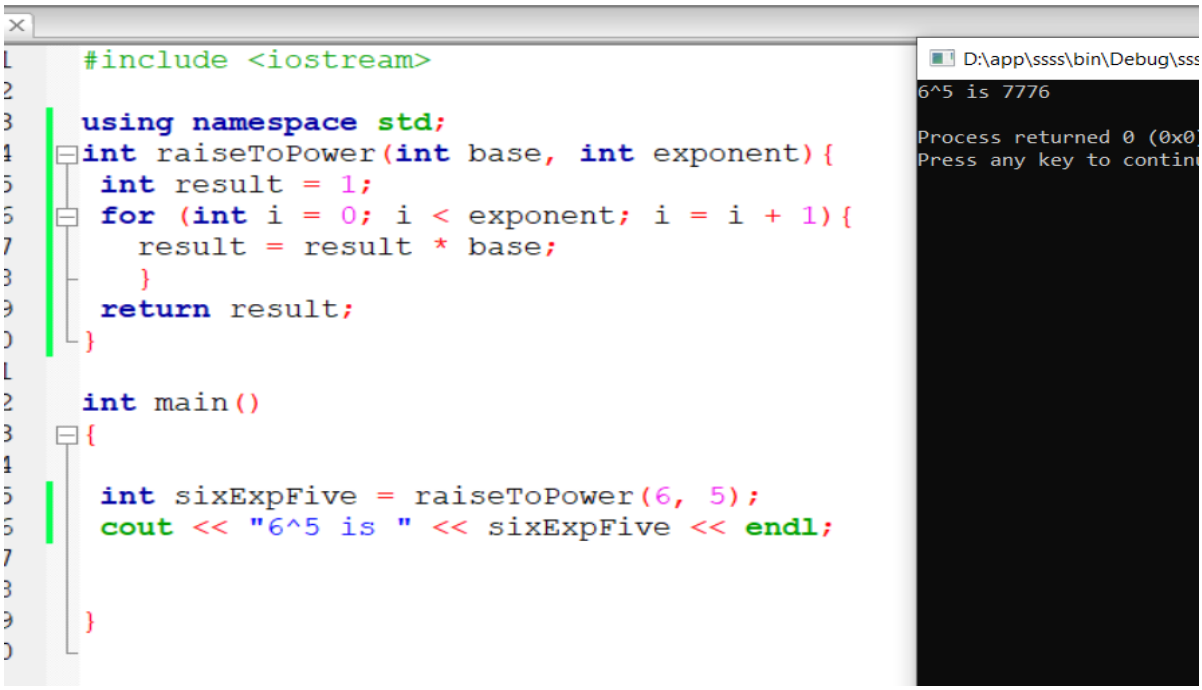
#sheet_4(Functions)

1-Write a program that calculates 6^5. Declare your own function to do this?

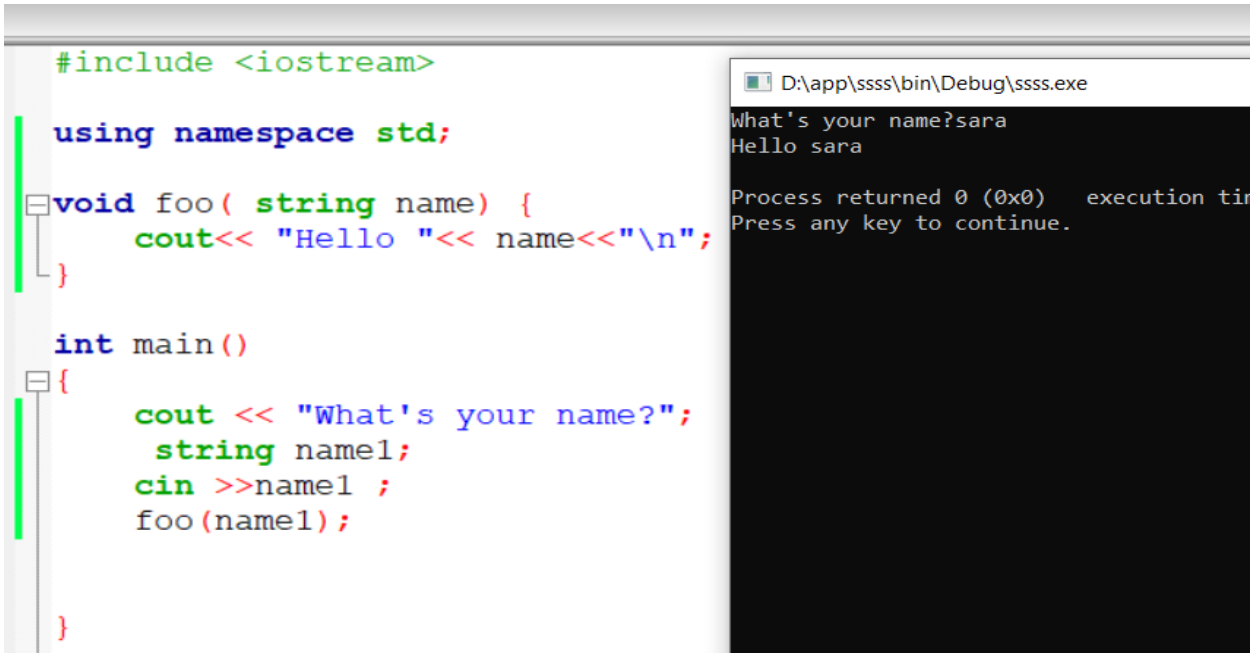


```cpp
#include <iostream>

using namespace std;
int raiseToPower(int base, int exponent){
 int result = 1;
 for (int i = 0; i < exponent; i = i + 1){
   result = result * base;
   }
 return result;
}

int main()
{

 int sixExpFive = raiseToPower(6, 5);
 cout << "6^5 is " << sixExpFive << endl;


}
```

```
D:\app\ssss\bin\Debug\sss
6^5 is 7776

Process returned 0 (0x0
Press any key to contin
```

2-Write a program that asks a name say hello. Use your own function that receives a string of characters (name) and prints on screen the hello message.

(Doesn't returns anything- void type)



```cpp
#include <iostream>

using namespace std;

void foo( string name) {
    cout<< "Hello "<< name<<"\n";
}

int main()
{
    cout << "What's your name?";
     string name1;
    cin >>name1 ;
    foo(name1);


}
```

```
D:\app\ssss\bin\Debug\ssss.exe
What's your name?sara
Hello sara

Process returned 0 (0x0)   execution ti
Press any key to continue.
```

3-Write a program that ask for two numbers, compare them and show the maximum. Declare a function called max_two that compares the numbers and returns the maximum?

```
#include <iostream>

using namespace std;

int max_two(int a, int b){
    int maxi;
    if (a>b)
    maxi=a;
    else
    maxi=b;
    return maxi;
}
int main()
{
    int num1;int num2;int maximun;
    cout<< "Enter first number:";
    cin>> num1;
    cout<< "Enter second number:";
    cin>> num2;

    maximun=max_two(num1,num2);
    cout<< "The maximun of "<< num1 << " and " << num2 << " is: " << maximur
```

```
D:\app\ssss\bin\Debug\ssss.exe
Enter first number:50
Enter second number:9
The maximun of 50 and 9 is: 50
```

4-Write a program that asks the user for an integer number and find the sum of all natural numbers up to that number?

```cpp
#include <iostream>

using namespace std;


int sum_a(int num)
{
    int suma=0;
    for(int i=1;i<=num;i=i+1){
        suma=suma+i;}

    return suma;
}
int main()
{

   int a,sum=0;
   cout<<"Enter a number:";
   cin>>a;

   cout<<sum_a(a);


}
```

```
D:\app\ssss\bin\Debug\ssss.exe
Enter a number:5
15
Process returned 0 (0x0)
Press any key to continue.
```

5-C++ program to print all Even and Odd numbers from 1 to N?

```
Input: N = 5
Output:
Even: 2 4 6 8 10
Odd: 1 3 5 7 9

Input: N = 3
Output:
Even: 2 4 6
Odd: 1 3 5
```

Answers:

```
// Function to print even numbers
void printEvenNumbers(int N)
{

    cout << "Even: ";
    for (int i = 1; i <= 2 * N; i++) {

        // Numbers that are divisible by 2
        if (i % 2 == 0)
            cout << i << " ";
    }
}

// Function to print odd numbers
void printOddNumbers(int N)
{

    cout << "\nOdd: ";
    for (int i = 1; i <= 2 * N; i++) {

        // Numbers that are not divisible by 2
        if (i % 2 != 0)
            cout << i << " ";
    }
}
```

```
}
int main()
{


    int N = 5;

    printEvenNumbers(N);
    printOddNumbers(N);


}
```

6- Write a program to swap between two numbers by the function?

```
using namespace std;


void swap(int x,int y)
{
 int z;

 z=x;
 x=y;
 y=z;
 cout<<" "<<x<<"    "<<y;

}

int main()
{

    int a,b;
    cout<<"Enter the Two Numbers to Swap in C++: ";
    cin>>a>>b;
    cout<<"\nAfter Swapping of Two Numbers:";
    swap(a,b);

}
```

```
D:\app\ssss\bin\Debug\ssss.exe
Enter the Two Numbers to Swap in C++:  23 44

After Swapping of Two Numbers: 44   23
Process returned 0 (0x0)   execution time : 5.701 s
Press any key to continue.
```

7- c++ function that finds average, sum, min and max of n numbers?

```cpp
using namespace std;

void printStatistics(int n)
{
    int response;
    int sum = 0;
    int max;
    int min;

    for (int i = 1; i <= n; ++i)
    {
        std::cout << "Please enter the number in the " << i << " position: ";
        std::cin >> response;
        if (i == 1)
        {
            min = response;
            max = response;
        }
        (min > response) ? min = response : min = min;
        (max < response) ? max = response : max = max;
        sum += response;
    }
    std::cout << "Sum: " << sum << std::endl;
    std::cout << "Average: " << (float)sum / n << std::endl;
    std::cout << "Min: " << min << std::endl;
    std::cout << "Max: " << max << std::endl;
}

int main()
{

        int numberCount;
        std::cout << "How many numbers would you like to print? ";
        std::cin >> numberCount;

    printStatistics(numberCount);

}
```

```
D:\app\ssss\bin\Debug\ssss.exe
How many numbers would you like to print? 3
Please enter the number in the 1 position: 10
Please enter the number in the 2 position: 33
Please enter the number in the 3 position: 2
Sum: 45
Average: 15
Min: 2
Max: 33

Process returned 0 (0x0)   execution time : 14.826 s
Press any key to continue.
```