

PRI LAB 5

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2

FUNCTIONS

3 WHY FUNCTIONS?

1. Easier to understand.
2. Easier to change.
3. Easier to write.
4. Easier to test.
5. Easier to debug.
6. Easier for teams to develop.
7. Easier to reuse.

4 FUNCTION COMPONENTS

Function declaration (function prototype)

Function definition

5 FUNCTION COMPONENTS: FUNCTION DECLARATION (FUNCTION PROTOTYPE)

- Its includes the name of the function and the types of its arguments.
- Syntax:
 - `Type_returned Function_Name (Parameter_List);`
- Syntax error:
 - Forgetting the semicolon at the end of a function prototype.
 - A function call that does not match the function prototype.
 - Forgetting a function prototype when a function is not defined before it is first invoked.

6 FUNCTION COMPONENTS: FUNCTION DEFINITION

- Provides the same information as the declaration.
- Describes how the function does its task.
- Syntax:

```
Type_returned Function_Name (Parameter_List)
{
    declaration and statements
}
```

7 EXAMPLE I (CALL BY VALUE)

- Question:
 - Write a function that calculate the power of number, function should have two parameter and return the value of the estimated power.

8 EXAMPLE I SOLUTION

```
float Power(int, int);

void main()
{
    int x, y;
    cout << "enter base and exponential" << endl;
    cin >> x >> y;
    cout << x << "^" << y << "=" << Power(x, y);
}

float Power(int b, int e)
{
    float po = 1;
    for (int i = 0; i < e; i++)
        po = po*b;
    return po;
}
```


9 EXAMPLE 2 (PASS ID ARRAY)

- Question:
 - Write a program that contains two functions one for reading an ID array and another one to print it.

10 EXAMPLE 2 SOLUTION

```
void ReadArray(int x[], int n);  
void PrintArray(int x[], int n);  
  
void main()  
{  
    int array[10];  
    cout << "enter the array elements" << endl;  
    ReadArray(array, 10);  
    cout << "the elements of the array" << endl;  
    PrintArray(array, 10);  
}
```

II EXAMPLE 2 SOLUTION

```
void ReadArray(int x[], int n)
{
    for (int i = 0; i < n; i++)
        cin >> x[i];
}
void PrintArray(int x[], int n)
{
    for (int i = 0; i < n; i++)
        cout << x[i] << endl;
}
```

HOMEWORK'S

I3 HOMEWORK I

- Problem:
 - Rewrite the first example and add to the power function the following conditions:

$$b^0 = 1$$

$$b^{-e} = \frac{1}{b^e}$$

I4 HOMEWORK 2

- Problem:
 - Rewrite the second example and add a function to calculate the average of the array.

15 THE END

