

# Programming Fundamentals

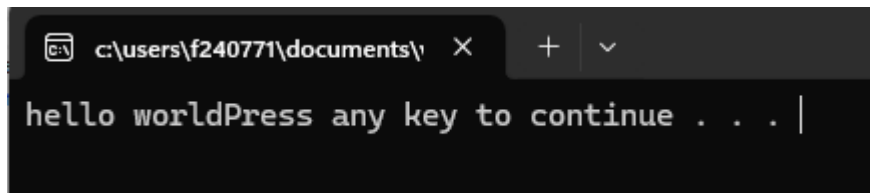
## Lab 4

### Task 1:

```
#include <iostream>
using namespace std;
int main() {
    cout << "hello world";

    system("pause");
    return 0;
}
```

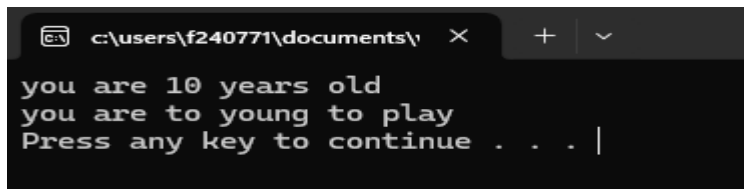
Output :

A screenshot of a terminal window with a dark background. The title bar shows the file path 'c:\users\f240771\documents\' and a tab icon. The terminal displays the text 'hello world' followed by 'Press any key to continue . . . |' with a cursor at the end of the line.

**Task 2:** Write a C++ program to print the following lines: You are 10 years old. You are too young to play the game.

```
#include <iostream>
using namespace std;
int main() {
    cout << "you are 10 years old "<<endl;
    cout << "you are too young to play"<<endl;
    system("pause");
    return 0;
}
```

Output :

A screenshot of a terminal window with a dark background. The title bar shows the file path 'c:\users\f240771\documents\' and a tab icon. The terminal displays two lines of text: 'you are 10 years old' and 'you are too young to play', each followed by a new line. Below these, it shows 'Press any key to continue . . . |' with a cursor at the end of the line.

Task 3: Write five C++ statements to print the asterisk pattern as shown below.

```
#include<iostream>
using namespace std;
int main() {

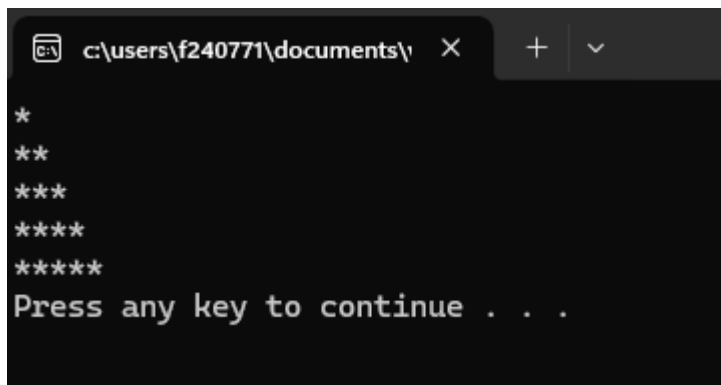
    int i = 0;           // initialize i
    while (i < 5) {       // run until i is less than 5

        int j = 0;

        while (j <= i) {  // run until j is less than or equal to i
            cout << "**";  // print stars
            j++;
        }

        i++;              // increment
        cout << endl;
    }
    system("pause");
    return 0;
}
```

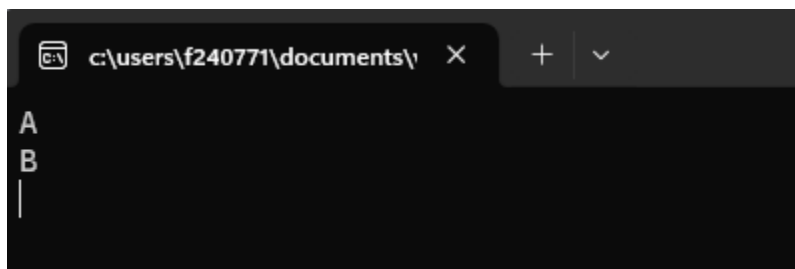
Output:



```
c:\users\f240771\documents\>
*
**
***
****
*****
Press any key to continue . . .
```

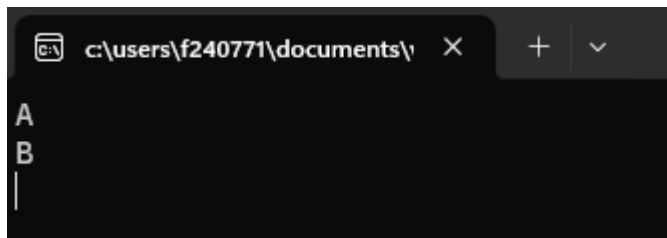
Task 4: Type and save the following programs in Visual Studio. Run these programs and observe their outputs.

Output 1:



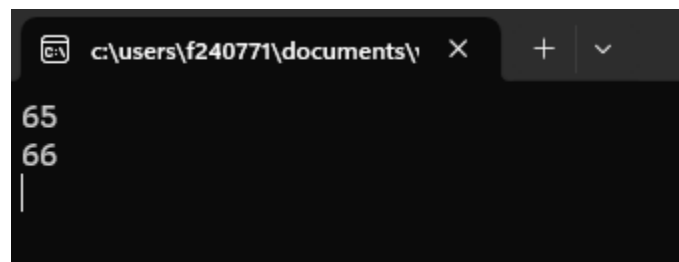
```
c:\users\f240771\documents\>
A
B
|
```

Output 2:



```
c:\users\f240771\documents\ X + v
A
B
|
```

Output 3:



```
c:\users\f240771\documents\ X + v
65
66
|
```

Task 5: Take two integers as input from the user apply arithmetic operations on them (+, -, \*, /) .

```
#include <iostream>
using namespace std;
int main() {
    int N1, N2, sum, prod, sub, div;

    cout << "enter two numbers ";
    cin >> N1 >> N2;
    sum = N1 + N2;
    prod = N1 * N2;
    sub = N1 - N2;
    div = N1 / N2;

    cout << "sum " << sum << endl;
    cout << "prod " << prod << endl;
    cout << "sub" << sub << endl;
    cout << "div " << div << endl;
    system("pause");
    return 0;
}
```

**Output:**

```
c:\users\f240771\documents\ X + v
enter two numbers 12 6
sum 18
prod 72
sub6
div 2
Press any key to continue . . . |
```

**Task 6: Write the output of the following code.**

```
C:\Users\f240771\Documents\ X + v
Please enter your three numbers 1 2 3
1
2
3
3
2
1
Press any key to continue . . . |
```

**Task 8 :**

1. **Calculate the Area of a Circle (area =  $PI * r^2$ ).**
2. `#include <iostream>`
3. `using namespace std;`
4. `int main() {`
5.     `float pi = 3.14, Area, r;`
6.     `cout << "enter the radius of the circle "`
7.         `cin >> r;`
8.     `Area = pi * (r*r);`
9.     `cout << "Area =" << Area;`
10.    `system("pause");`
11.    `return 0;`
- `}`

**Output :**

```
c:\users\f240771\documents\ X + v
enter the radius of the circle 5
Area =78.5
Press any key to continue . . . |
```

## 2. Calculate the Area of a Rectangle (area = length \* width).

```
#include <iostream>
using namespace std;
int main() {
    int len, wid, area;
    cout << "enter the lenght and width ";
    cin >> len;
    cin >> wid;
    area = len * wid;
    cout << "Area =" << area;
    system("pause");
    return 0;
}
```

### Output :

```
c:\users\f240771\documents\ X + v
enter the lenght and width 5 2
Area =10
Press any key to continue . . . |
```

## 3. Calculate the Area of a Triangle (area = base \* height \* .5).

```
#include <iostream>
using namespace std;
int main() {
    int Area, base ,height;
    cout << "enter the base and height of the triangle ";
    cin>> base >> height ;
    Area = (base * height * .5);

    cout << "Area =" << Area<<endl ;
    system("pause");
    return 0;
}
```

### Output:

```
c:\users\f240771\documents\ X + v
enter the base and height of the triangle 5 4
Area =10
Press any key to continue . . . |
```

### Task 9:

Write a program that holds the prices of the five items in five variables. Display each item's price, the subtotal of the sale, the amount of sales tax, and the total. Assume the sales tax is 6%.

```
#include <iostream>
using namespace std;
int main() {
    float a = 12.95, b = 24.95, c = 6.95, d = 14.95, e = 3.95 , sum ;
    cout << "price of item 1 =" << a << endl;
    cout << "price of item 2 =" << b << endl;
    cout << "price of item 3 =" << c << endl;
    cout << "price of item 4 =" << d << endl;
    cout << "price of item 5 =" << e << endl;
    sum = a + b + c + d + e ;
    cout << "sub total =" << sum;

    float tax, d = 0.6;
    tax = sum * d ;
    cout << "saletax =" << tax ;
    system("pause");
    return 0;
}
```

### Output:

c:\users\f240771\documents\ X

+

▼

```
price of item 1 =$12.95
price of item 2 =$24.95
price of item 3 =$6.95
price of item 4 =$14.95
price of item 5 =$3.95
sub total =63.75
saletax =38.25
Press any key to continue . . . |
```