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Course/Course code: Programming Logic and Design/CPE C103
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Experiment No. 4
Input and Output statements

Program No. 1

```cpp
#include <iostream>
#include <conio.h>
using namespace std;
int main()
{
    cout<< "Hello World! ";
    getch();
    return 0;
}

```

Program No. 2

```cpp
#include <iostream>
using namespace std;
int main()
{
    int age;
    age = 16;
    cout<< "My age is "<<age;
    cin.get();
    return 0;
}

```

Program No. 3

```cpp
#include <iostream>
#include <conio.h>
using namespace std;
int main()
{
    char ch;
    ch = 'A';
    cout<< ch;
    ch = 'B';
    cout<< ch;
    getch();
    return 0;
}

```

Program No. 4

```cpp
#include <iostream>
#include <conio.h>
using namespace std;
int main()
{
   int x, y;
   cout<< "Enter value for x and y: ";
    cin>> x>> y;
    cout<< "Quotient : "<<x/y<<"\n";
    cout<< "Remainder : "<<x%y;
    getch();
    return 0;
}

```

Program No. 5

```cpp
#include <conio.h>
#include <iostream>
#include <iomanip>
using namespace std;
int main()
{

// conversion feet to meters

    int feet;
    float meters;
    cout<< "Enter a number in feet : ";
    cin>> feet;
    meters = feet*0.3048;
    cout<< feet << " feet is " <<setprecision(4) <<meters<< "meters";

    getch();
    return 0;
}

```

Program No. 6

```cpp
#include <conio.h>
#include <iostream>

using namespace std;

int main()
{
    int i, j;
    cout<< "Enter two number: ";
    cin>>i>>j;
    cout<<i<<"=="<<j<<"is"<<(i==j)<<"\n";
    cout<<i<<"!="<<j<<"is"<<(i!=j)<<"\n";
    cout<<i<<"<="<<j<<"is"<<(i<=j)<<"\n";
    cout<<i<<">="<<j<<"is"<<(i>=j)<<"\n";
    cout<<i<<"<"<<j<<"is"<<(i<j)<<"\n";
    cout<<i<<">"<<j<<"is"<<(i>j)<<"\n";
    getch();
    return 0;
}


```

Program No. 7

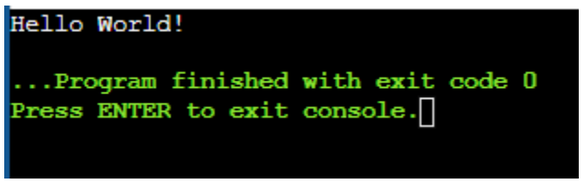
```cpp
#include <iostream>
#include <conio.h>
using namespace std;

int main()
{
    int i, j;
    cout<< "Enter two number:";
    cin>> i >> j;
    cout<< i <<"AND"<< j << "is" << (i&&j) <<"\n";
    cout<< i <<"OR"<< j << "is" << (i||j) <<"\n";
    cout<< "NOT" << j << "is" << (!i) <<"\n";
    getch();
    return 0;
}

```

Program No. 8

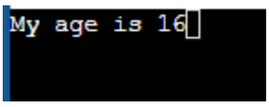
```cpp
#include <iostream>
#include <conio.h>
using namespace std;
int main()
{
    int a, b;
    a = b = 5;
    cout <<"\n"<<a--<<"  "<<--b;
    cout <<"\n"<<a--<<"  "<<--b;
    cout <<"\n"<<a--<<"  "<<--b;
    cout <<"\n"<<a--<<"  "<<--b;
    cout <<"\n"<<a--<<"  "<<--b;
    getch();
    return 0;
}

```

Summary of Program Output

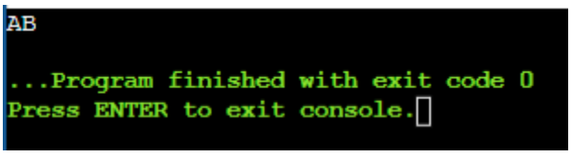
1. A basic code where we directly output a sentence.



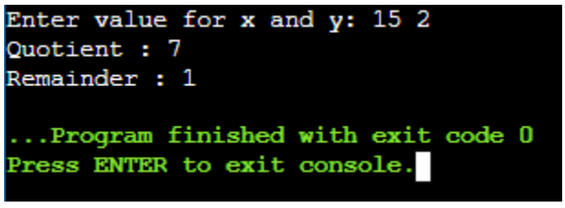
2. A code where we initialize the value of ”age” with a data type Integer and we retrieved the variable to display it along with the sentence of “My age is “.



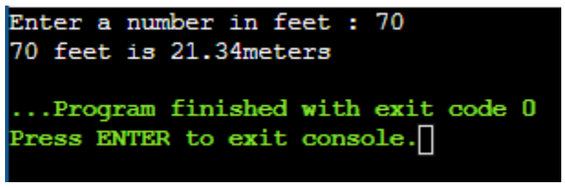
3. We initialize the character first and then we gave it a value of “A” and then displayed it, and then we changed the value To “B” and displayed it again.



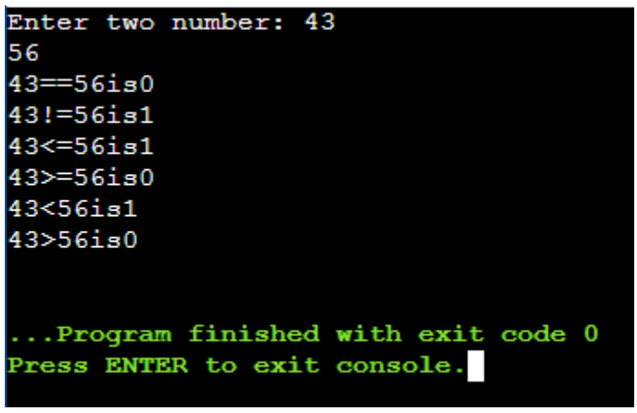
4. A code where the user inputs the value of x and y, and then x is divided by y using / Division and then the quotient is displayed, and next is the remainder of it was calculated and displayed by using a % Modulo division.



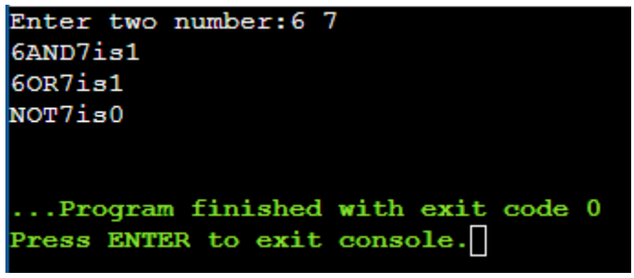
5. A code where we initialize the variable feet into a integer and the variable meters into a float for it to accept a decimal value. And then we prompt the user to enter the value of feet to be converted into meters, then we calculate the value of meters by multiplying the prompted value of feet into 0.3048. By using a set precision with a value of 4, it will only take up to 4 digits, or in this case up to 2 decimal places.



6. A code where we prompt the user to enter 2 number and we initialize it to the variable i and j, and we compared it using the relational operators. This code displays the True or False value in the form of 0 and 1, where the 0 is False and 1 is True.



7. Again, a code where we prompt the user to enter two numbers, for the value of i and j, then we used Logical operators to compare or relate the two values, the resulting output is 1 for “and” and “or” operators, because we didn’t assign any conditions for it to differentiate the true and false values. And lastly 0 for the “not” operator because we negated the value of i.



8. And lastly, a simple output of numbers that decreases by 1. First we initialize the value of a and b to 5 where we will find that in the left-side, It started from 5 all the way to 1, the reason that it started from 5 is because we used the post decrement operator for a where it decreases value in the next line or output. and for the right side it started from 4 all the way to 0 because we used the prefix decrement where the decrease in value took effect immediately.

```
5   4
4   3
3   2
2   1
1   0

...Program finished with exit code 0
Press ENTER to exit console.
```

Supplementary Problems

1. Write a program that will allow a user to find the hypotenuse of a right triangle using the Pythagorean theorem ($c^2 = a^2+b^2$). Round off to 2 decimal places.

```cpp
#include <iostream>
#include <cmath>
#include <iomanip>
using namespace std;
int main()
{
    int A, B;
    double C;
    cout<< "Enter the value of side A and side B : ";
    cin>> A>> B;
    C=sqrt((A*A)+(B*B));
    cout<< "The Hypotenuse of the right triangle with side A as " <<A;
    cout<< " and side B as " <<B;
    cout<< " is equals to : " <<setprecision(4)<<C;

    return 0;

}
```

input

```
Enter the value of side A and side B : 34 64
The Hypotenuse of the right triangle with side A as 34 and side B as 64 is equals to : 72.47

...Program finished with exit code 0
Press ENTER to exit console.
```

2. Design a program to find the circumference of a circle. Use the formula: $C=2\pi r$, where π is approximately equivalent to 3.1416. Round off to 2 decimal places.

```cpp
#include <iostream>
#include <iomanip>
using namespace std;
int main()
{
    int rad;
    double circ;
    #define PI 3.1416

    cout<< "Enter the value of radius : ";
    cin>> rad;

    circ = 2*PI*rad;
    cout<< "The circumference of the circle with a radius of " <<rad << " is : " <<setprecision(4)<<circ;

    return 0;
}
```

input

```
Enter the value of radius : 8
The circumference of the circle with a radius of 8 is : 50.27

...Program finished with exit code 0
Press ENTER to exit console.
```

3. Write a program that exchanges the value of two variables: x and y. The output must be: the value of variable y will become the value of variable x, and vice versa.

```cpp
#include <iostream>
using namespace std;
int main()
{
    int x, y;

    cout<< "Enter the value of x: ";
    cin>> x;
    cout<< "Enter the value of y: ";
    cin>> y;

    x = x+y;
    y = x-y;
    x = x-y;

    cout<<"The value of variable x will become: " <<x <<" and the value of variable y will become: " <<y;
    return 0;
}
```

input

```
Enter the value of x: 13
Enter the value of y: 14
The value of variable x will become: 14 and the value of variable y will become: 13

...Program finished with exit code 0
Press ENTER to exit console.
```

Conclusion

All in all, this experiment has been very helpful for me personally, it taught me how to use new things inside a code, from setting the decimal places using a setprecision() and the use of simple mathematical concepts to manipulate the value of the variables. It also taught me how to be attentive to the small details, as big mistakes in coding can be very simple. And lastly, writing a code can be fun, sure that sometimes it can be difficult to understand simple concepts, but with time, perseverance, hard work, and practice, anyone can cook, I mean code.