CP Lab-02 Tasks

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Course:	CP Lab

Task 1: User Input

Write a program that takes 3 values from user. Two values of integer and one value of float data type. Print each result on one line.

Code:

```cpp
#include <iOStream>
using namespace std;

int main() {

    int intValue1, intValue2;
    float floatValue;

    cout << "Enter an integar: " <<endl;
    cin >> intValue1;

    cout << "Enter another integar:" << endl;
    cin >> intValue2;


    cout << "Enter a float value: " << endl;
    cin >> floatValue;

    cout << intValue1 << endl << intValue2 << endl << floatValue;

    return 0;
}
```
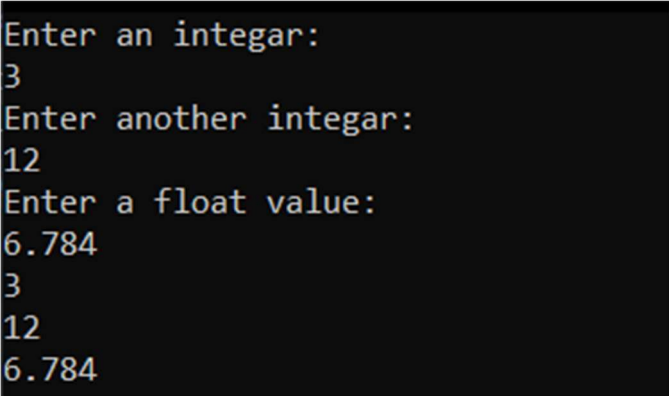
Output:

```
Enter an integar:
3
Enter another integar:
12
Enter a float value:
6.784
3
12
6.784
```

Task 2: Arithmetic Operations

Write **simple calculator** program takes an arithmetic operator `+, -, *, /` and two operands from the user. Then, it performs the calculation on the two operands depending upon the operator entered by the user.

Code:

```cpp
#include <iOStream>
using namespace std;

int main() {

    float a, b,result;
    char choice;
    cout << "Enter a number: " << endl;
    cin >> a;

    cout << "Enter another number: " << endl;
    cin >> b;

    cout << "Press + to perform Addition" << endl;
    cout << "Press - to perform Subtraction" << endl;
    cout << "Press * to perform Multiplication" << endl;
    cout << "Press / to perform Division" << endl;
    cin >> choice;

    if (choice == '+') {
        result = a + b;
        cout << result;
    }
    else if (choice == '-') {
        result = a - b;
        cout << result;
    }
    else if (choice == '*') {
        result = a * b;
        cout << result;
    }
    else if (choice == '/') {
        result = a / b;
        cout << result;
    }
    else {
        cout << "Invalid choice!";
    }

    return 0;
}
```

```
Enter a number:
16
Enter another number:
4
Press + to perform Addition
Press - to perform Subtraction
Press * to perform Multiplication
Press / to perform Division
-
12
```

Task 3 : Percentage

Write a C++ program that prompt input roll number, student name and marks of three subjects

1. Computer Programming = CP
2. Introduction to communication Technologies = ICT
3. Data Science = DS

Calculate total marks, percentage of student.

<div style="color:red; text-align:center">Marks percentage = marks obtained / total * 100</div>

Code:

```cpp
#include <iOStream>
#include <string>
using namespace std;

int main() {

    string std_name;
    int std_rol, marksOfCP, marksOfICT, marksOfDS;

    cout << "Enter your name: " << endl;
    cin >> std_name;
```

```cpp
        cout << "Enter your rol no: " << endl;
        cin >> std_rol;

        cout << "Enter marks of Computer Programming(CP): " << endl;
        cin >> marksOfCP;

        cout << "Enter marks of ICT: " << endl;
        cin >> marksOfICT;

        cout << "Enter marks of Data Science: " << endl;
        cin >> marksOfDS;

        float obtainedMarks = marksOfCP + marksOfICT + marksOfDS;
        float percentage = (obtainedMarks / 300) * 100;

        cout << "Total Marks = " << obtainedMarks << endl
             << "Percentage = " << percentage << "%";

        return 0;
}
```

Output:

```
Enter your name:
Raza
Enter your rol no:
028
Enter marks of Computer Programming(CP):
78
Enter marks of ICT:
64
Enter marks of Data Science:
81
Total Marks = 223
Percentage = 74.3333%
```

Task 4 : Calculating Value of X

Write a program to solve the following equation. Take value of a and b from user.

$$X = (a + b)2$$

Code:

```cpp
#include <iOStream>
using namespace std;

int main() {

        float a,b;

        cout << "Enter a: " << endl;
        cin >> a;

        cout << "Enter b: " << endl;
        cin >> b;

        float  x = (a + b) * (a + b);

        cout << "X = " << x;

        return 0;
}
```
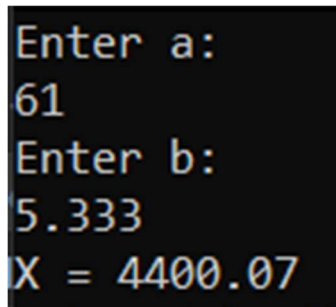
Output:

```
Enter a:
61
Enter b:
5.333
X = 4400.07
```

Task 5 : Word Game

Write a program that plays a word game with the user. The program should ask the user to enter the following also display user age in days from current date.

> User's name
> Year of birth (eg. 1990)
> Name of university
> A favorite hobby
> A pet's name

Write a program that will produce an outcome as below:

```
What is your name?   : Siti
Enter year of birth : 1993
Name of University   : UTP
Favorite hobby       : read
Pet's name           : Chucky

"There lives a person named Siti who is currently
19 years of age. Siti is studying at UTP. It is
interesting because Siti likes to read with Chucky
and they lived happily ever after!"
```

Code:

```cpp
#include <iOStream>
#include <string>
using namespace std;

int main() {

    int yearOfBirth;
    string username, uni_name, hobby, pet_name;

    cout << "What is your name? : ";
    cin >> username;

    cout << "Enter year of birth : ";
    cin >> yearOfBirth;

    cout << "Name of University : ";
    cin >> uni_name;
```

```
        cout << "Favourite hobby : ";
        cin >> hobby;

        cout << "Pet's name : ";
        cin >> pet_name;

        int age = 2023 - yearOfBirth;
        int ageInDays = (2022 - yearOfBirth) * 60 + 11;

        cout << "There lives a person named " << username << " who is currently " <<
        age << " years and " << ageInDays << " days old. " << username << " is
        studying at " << uni_name << ". " << username << " likes " << hobby << " and
        also have a pet named " << pet_name << ". They often play together and live
        happily!";

        return 0;
}
```

Output:

```
What is your name? : Raza
Enter year of birth : 2004
Name of University : BUKC
Favourite hobby : gaming
Pet's name : tommy
There lives a person named Raza who is currently 19 years and 1091 days old. Raza is studying at BUKC. Raza likes gaming
 and also have a pet named tommy. They often play together and live happily!
```

Task 6

Hypotenuse refers to the right angle in a triangle (as shown in the side opposite right-angled the diagram below).

Hypotenuse can be calculated using the following formula:
$$h = \sqrt{x^2 + y^2}$$

Area of this right-angled triangle can also be calculated using the following formula: a
$$= \tfrac{1}{2} * x * y$$

Note that:

h=Hypotenuse

x= adjacent

y= opposite

Write a C++ program that prompt user to enter value of X and Y. You have to calculate the value of Hypotenuse (h) and Area(a).

Code:

```cpp
#include <iOStream>
#include <cmath>
using namespace std;

int main() {

    float x, y, h, a;

    cout << "Enter x : ";
    cin >> x;

    cout << "Enter y : ";
    cin >> y;

    h = sqrt(pow(x, 2) + (y, 2));
    a = 0.5 * x * y;


    cout << "Hypotenuse = " << h <<endl;
    cout << "Area of triangle = " << a;

    return 0;
}
```
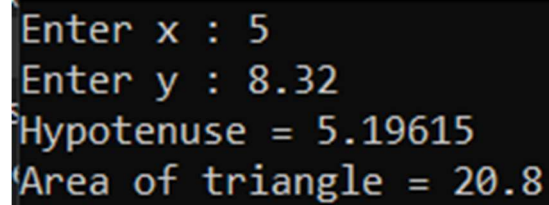
Output:

```
Enter x : 5
Enter y : 8.32
Hypotenuse = 5.19615
Area of triangle = 20.8
```