



Iqra National University Peshawar Pakistan

Department of Computer Science

Spring Semester, Mid-Assignment, April 2020

Subject:	Programming Fundamentals	Issue Date:	13/April/2020
Program:	BS (CS & SE)	Submission Date:	18/April/2020
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Class : Bs.SE

Note: Attempt all Questions..

Q.1

- a) **Draw the flow chart and write a C++ program to get** two integer items from **keyboard** and **then** display to the screen their sum, difference, product and quotient.

Answer 01 a) :

Start

**Input;
First Number,
Second Number**

**Sum = a+b;
Subtract = a-b;
Multiply = a*b;
Divide = a/b;**

**Print Sum;
Print Subtract;
Print Multiply;
Print Divide;**

End

C++ Program :

```

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

main(){

    inta,b;
    cout<<"-----Mid Assignment-----"<<endl;
    cout<<"-----Question # 1 part a Answer-----"
<<endl;
    cout<<"Please enter first value"<<endl;
    cin>>a;
    cout<<"Please enter second value"<<endl;
    cin>>b;
    cout<<endl;
    cout<<"Sum is : " << a + b <<endl;
    cout<<endl;
    cout<<"Subtract is : " << a - b <<endl;
    cout<<endl;
    cout<<"Multipliy is : " << a * b <<endl;
    cout<<endl;
    cout<<"Divide is : " << a / b <<endl;
    getch();
}

```

- b) **Draw the flow chart and write a C++ program to** prompt the user for a temperature in degrees Celsius (C), then convert the temperature in degrees Fahrenheit (F) using the following formula and display temperature in Fahrenheit (F) on monitor.

$$F = \frac{9}{5} \times C + 32$$

Answer 01 b :**C++ Program :**

```

#include <iostream>
using namespace std;

intmain()
{
floatfrh,cel;
    cout<<"\n\n Convert temperature in Celsius to
Fahrenheit :\n";
    cout<<"-----"
-----\n";
    cout<<" Input the temperature in Celsius : ";
    cin>>cel;

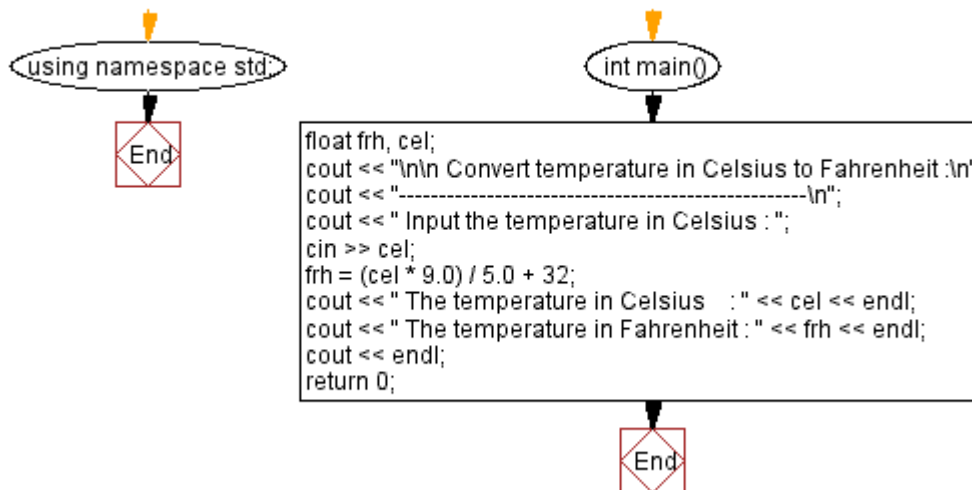
```

```

frh=(cel*9.0)/5.0+32;
cout<<" The temperature in Celsius   : "<<cel<<endl;
cout<<" The temperature in Fahrenheit : "<<frh<<endl;
    cout<<endl;
return 0;
}

```

Flow chart :



- Q.2 a) **Draw the flow chart and write a C++ program** that will prompt an operator to input three characters, receive those three characters, and display a welcoming message to the screen such as **'Hello xxx! We hope you have a nice day.'**

Answer 02 a :

C++ Program :

```

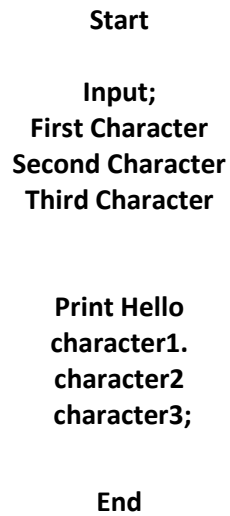
#include<iostream>
using namespace std;

int main()
{
    char ch1, ch2, ch3;
    cout<< "\nEnter First character : ";
    cin>>ch1;
    cout<< "\nEnter Second character : ";
    cin>>ch2;
    cout<< "\nEnter Third character : ";
    cin>>ch3;
    cout<<endl;
    //
    cout<<"Hello "<<ch1<<ch2<<ch3<<"!";
}

```

```
        return 0;
    }
```

Flow chart :



- b) You were asked by your project leader to write a simple program that obtains the radius of a circle. The program calculates the area and perimeter then prints radius, the area and the perimeter. **Draw the flow chart and write a C++ program.**

Answer 02 b :

C++ Program :

Code:

```
#include <iostream>
using namespace std;
```

```
int main()
{
    const double pi = 3.14;
    double radius, area, circumference;

    cout<< "please input radius : ";
    cin>> radius;
    cout<<endl;

    circumference = 2 * pi * radius;
    area = pi * radius * radius;

    cout<< "area : " << area <<endl;

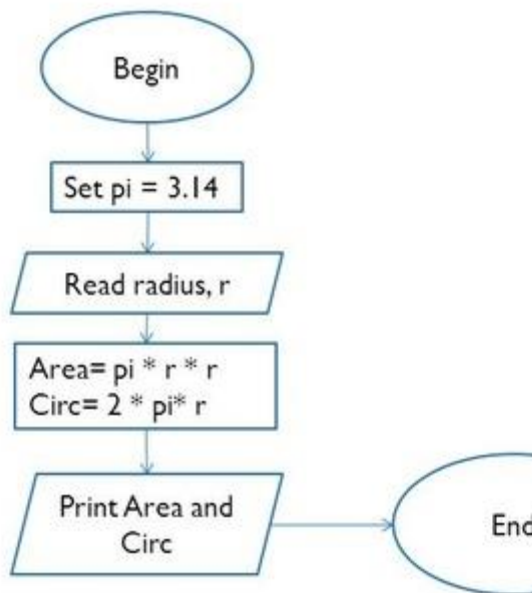
    cout<< "circumference : " << circumference <<endl;

    cin.ignore( 1000, '\n' ); // extract and discard the new line charecter remaining
    in the input buffer
    cin.get(); // keep the console open till user presses enter
```

```
        // return 0; // this is not required; there is an implicit return 0 at the
end of main
}
```

Answer

▶ Flowchart



- Q.3 a) A student has to take three tests per semester. Each test has maximum marks of 50. By using a system, lecturer can enter marks obtained for each test as input. Draw a flowchart and write C++ program to calculate the percentage obtained by the student. Print the result..

Answer 03 a :

C++ Program :

Code:

```
#include <iostream>
using namespace std;
```

```
int main(){
```

```
    intfirstSubjectMarks, secondSubjectMarks,thirdSubjectMarks,
totalMarks = 50;
    cout<<endl;
```

```

cout<<"Result Card generator"<<endl;
cout<<endl;
cout<<"Please Enter First subject Marks: ";
cin>>firstSubjectMarks;
cout<<"Please Enter Second subject Marks :";
cin>>secondSubjectMarks;
cout<<"Please Enter Third subject Marks :";
cin>>thirdSubjectMarks;
cout<<endl;

cout<<"First subject Total Marks is: "<<totalMarks<<endl;
cout<<"First subject Obtained Marks is: "<<firstSubjectMarks<<endl;
cout<<"First Subject Percentage is : " << (firstSubjectMarks
*100)/totalMarks<<endl;
cout<<endl;
cout<<"Second subject Total Marks is: "<<totalMarks<<endl;
cout<<"Second subject Obtained Marks is:
"<<secondSubjectMarks<<endl;
cout<<"Second Subject Percentage is : " << (secondSubjectMarks
*100)/totalMarks<<endl;
cout<<endl;
cout<<"Third subject Total Marks is: "<<totalMarks<<endl;
cout<<"Third subject Obtained Marks is: "<<thirdSubjectMarks<<endl;
cout<<"Third Subject Percentage is : " << (thirdSubjectMarks
*100)/totalMarks<<endl;

return 0;
}

```

Result :

```

Result Card generator
Please Enter First subject Marks: 37
Please Enter Second subject Marks :23
Please Enter Third subject Marks :11

First subject Total Marks is: 50
First subject Obtained Marks is: 37
First Subject Percentage is :74

Second subject Total Marks is: 50
Second subject Obtained Marks is: 23
Second Subject Percentage is :46

Third subject Total Marks is: 50
Third subject Obtained Marks is: 11
Third Subject Percentage is :22

-----
Process exited after 7.951 seconds with return value 0
Press any key to continue . . .

```

Flowchart :

Start

Input;

- 1st subject marks,**
- 2nd subject marks,**
- 3rd subject marks,**

1stsubj % = (obtained*100)/T.marks
2nd subj % = (obtained*100)/T.marks
3rdsubj % = (obtained*100)/T.marks

Print 1stsubj percentage;
Print 2ndsubj percentage;
Print 3rdsubj percentage;

End

- b) **Draw the flow chart and write a C++ program** to calculate energy needed to heat water from an initial temperature to a final temperature. The user will enter the water amount (in kilograms) and its initial and final temperatures. The formula to compute the energy is

$$Q = M * (\text{final temperature} - \text{initial temperature}) * 4184$$

where M is the weight of the water (in kilograms), temperatures are in Celsius and energy Q is measured in joules.

Answer 03 b :

C++ Program :

Code:

```
#include <iostream>
using namespace std;

int main(){

    double waterMass, energy;
    double initialTemp, finalTemp;
    cout<<"Please enter amount of water in Kilograms : ";
    cin>>waterMass;
    cout<<"Please enter Initial Temperature : ";
    cin>>initialTemp;
    cout<<"Please enter Final Temperature :";
    cin>>finalTemp;
    cout<<endl;

    energy = waterMass * (finalTemp - initialTemp) * 4184;

    cout<<" Energy needed to heat water is : " <<energy;

    return 0;
}
```

Flowchart :

Start

**Input;
Mass of water,
Initial Temp,
Final temp,**

Energy = Mass *(Final Tem – Initial Temp) * 4184;

Print Energy

End

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