Iqra National University Peshawar Pakistan

Department of Computer Science

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Subject: C++

Note: Attempt all Questions. Help can be taken from net where ever is required.

Q.1

a) **Draw the flow chart to get** two integer items from **keyboard** and **then** display to the screen their sum, difference and product

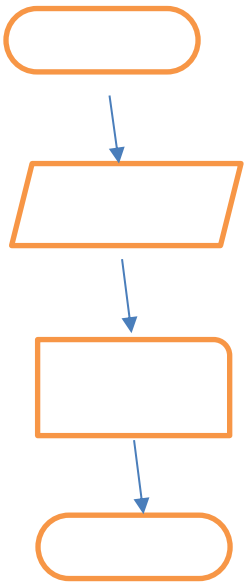
Solution:

Four Flow chart structures

- Sequence
- Decision
- Repetition
- Case

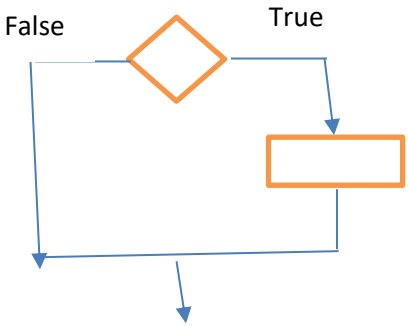
Sequence structure

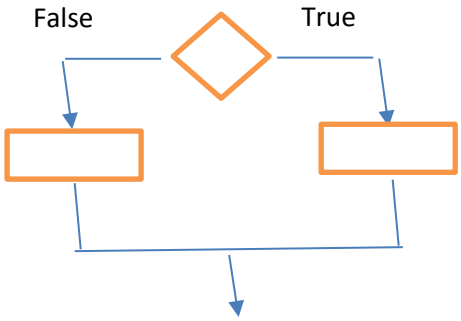
- A series of actions are performed in sequence
- The pay calculating example was a sequence flowchart



Decision structure

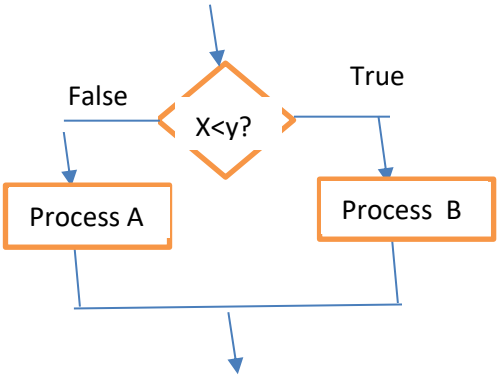
- If …… then
- If …… then …. else
- One of two possible actions is taken, depending on a condition





Decision Structure

- In the flow chart segment below, the question "is x < y?" is asked.
- If the answer is no, then process A is perfomed.
- If the answer is yes, then process B is perfomed.



Sum "

Int a;

Int b;

Int c;

A=10;

B=2;

C=a+b

Cout<<" The sum is "+c;

}

Difference

Int a;

Int b;

Int c;

A=20

B=2

C=a-b;

Cout<<"the difference"+c;

}

Product

Int a;

Int b;

Int c;

A=2

B=4

C=a*b;

Cout<<"product is" +c;

}

b) **Draw the flow chart 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.

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

Program

#include <iostream>
Using namespace std;
Main() { float cell;
Char temperature;
Cout<<"Enter Temp";
Cin>>Temperature;
Cell=(f-32)11.8;
Cout<<Temp in Feh"<<cell;

Q.2 a) **Draw the flow chart and write a C++ program** to find the Area and Perimeter of a Rectangle using the below formulae

Area of rectangle: **height*width**

Perimeter of rectangle: **2*(height + width)**

Solution:

Area of rectangle

```
#include<iostream>
Using namespace std;
Main(){
Float length, width, area;
Cout<<"enter area of T";
Cin>>length>>width;
Area=2(length x width);
Cout<<area;
}
```

b) **Draw the flow chart and write a C++ program to** obtain the radius of a circle. Then program calculates the area and perimeter using the below Formulae

Area of Circle = π*R*R
Circumference formula C = 2 * π * R. where π=3.14

Solution:

```
#include <iostream>
Using namespace std;
Int main()
{
Int width, length, area, peri;
Cout <<"\n\n find the area and perimeter of a rectangle :\n";
Cout <<"----------------------------------------------------------------\n";
Cout<<" input the length of the rectangle : ";
Cin>>lngth;
Cout<<" input the width of the rectangle : ";
Cin>>width;
Area=(lngth*width);
Peri=2*(lngth+width);
Cout<<"the area of the rectangle is : "<<area<< end1;
Cout<<" the perimeter of the rectangle is :"<<peri<<end1;
Cout<< end1;
Return 0;
}
```

Q.3 a) Discuss different types of programming languages.

Programming languages are specially designed so that one can pass one's data and instructions to the computer to do specific jobs.
There are two major parts of programming languages.

- Low level languages
- High level languages

Low level languages are further divided into Machine language and Assembly language
High level languages are meant for scientific application, for example FORTRAN AND C languages. COBOL is used for business applications.
Other languages are:PHP, Java, Python, ALGOL, Pascal etc.

b) How many translators are there to translate higher level language to machine language? Discuss.

Compiler:

It is a program translator that translates the instrucitons of higher level language to a macine language. It compiles machine language instructions for every program instructions of higher level language, that is why it is called compiler.
Compiler is a program translator like assembler but is more sophisticated. It first scans the entire program and then translates it to the machine code.
The programs which are written in higher level language is called source program. After this, program is converted into machine language by the compiler and it is called object program. A compiler translates only those source programs which have been written in that language.

Interpreter

It is another type of program translator used for translating higher level language into machine language. It takes one statement of higher-level languages, translate it into machine language and immediately execute it. Translation and execution are carried out for each statement. It differs from compiler which translate the entire source program into machine code. The advantage of interpreter as compared to compiler is its prompt response to changes in source program. It does not require large memory in computer. Its disadvantage is that it is time consuming method because each time a statement in a program is executed, then it is first translated. Therefore, compiled machine language program runs much faster than interpreted program.

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