

SUMMER MID TERM ASSIGMENT

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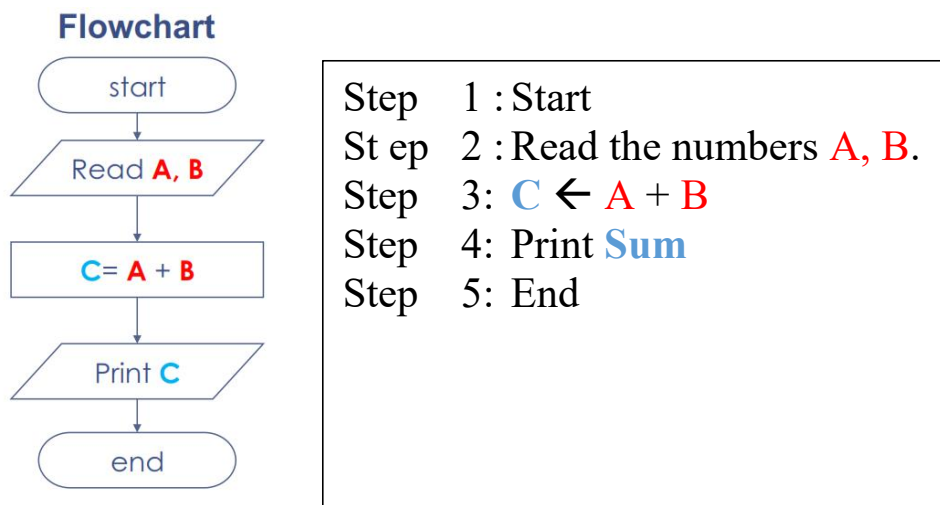
Q1: Draw the flow chart to get two integer items from keyboard and then display to the screen their sum, difference and product.

Ans: Draw the flow chart to get two integer items from **keyboard** and then display to the screen their sum, difference and product. 5
Answer

(i) Flowchart to gets two numbers and prints sum of their values

Inputs to the Flowchart : First **A** and Second **B**.

Expected output : **C** of the two numbers



(ii) Flowchart to gets two numbers and prints Difference of the given value:

Inputs to Flowchart : Two numbers **A, B**.

Expected output : **C** greater number

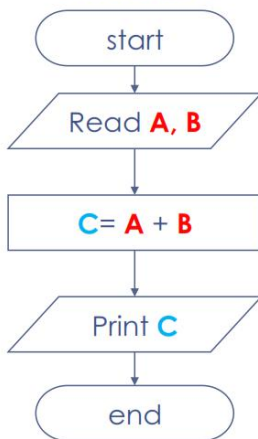
Draw the flow chart to get two integer items from keyboard and then display to the screen their sum, difference and product. 5
Answer

(iii) Flowchart to gets two numbers and prints sum of their values

Inputs to the Flowchart : First **A** and Second **B**.

Expected output : **C** of the two numbers

Flowchart

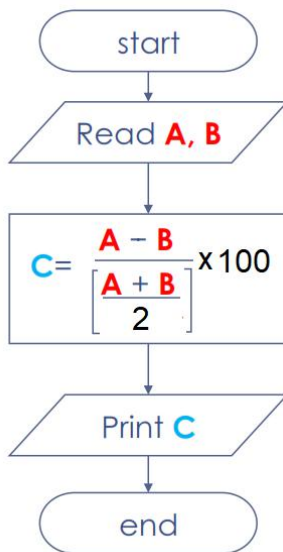


Step 1 : Start
Step 2 : Read the numbers **A, B**.
Step 3: $C \leftarrow A + B$
Step 4: Print **Sum**
Step 5: End

(iv) Flowchart to get two numbers and prints Difference of the given value:

Inputs to Flowchart : Two numbers **A, B**.

Expected output : **C** greater number

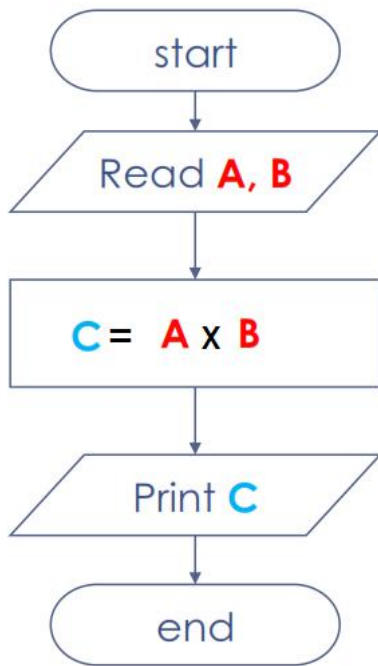


Step 1 : Start
Step 2 : Read the numbers **A, B**.
Step 3: $C = \frac{A - B}{A + B} \times 100$
Step 4: Print **Difference**
Step 5: End

(v) Flowchart to get two numbers and print product of the given values:

Inputs to Flowchart : Two numbers **A, B**.

Expected output : **C** is the product of **A** and **B**



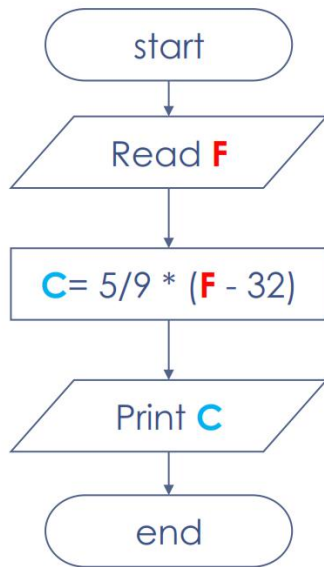
- | | |
|----------|------------------------|
| Step 1 : | Start |
| Step 2 : | Read the numbers A, B. |
| Step 3 : | $C = A / B$ |
| Step 4 : | Print Product |
| Step 5 : | End |

Q1.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.

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

Ans:

Inputs : Temperature in Fahrenheit, **F**
 Expected output : Temperature in Celsius, **C**



Step 1 : Start
 Step 2 : Read the temperature in Fahrenheit, **F**.
 Step 3: $C \leftarrow \frac{5}{9} * (F - 32)$
 Step 4: Print Temperature in Celsius **C**
 Step 5: End

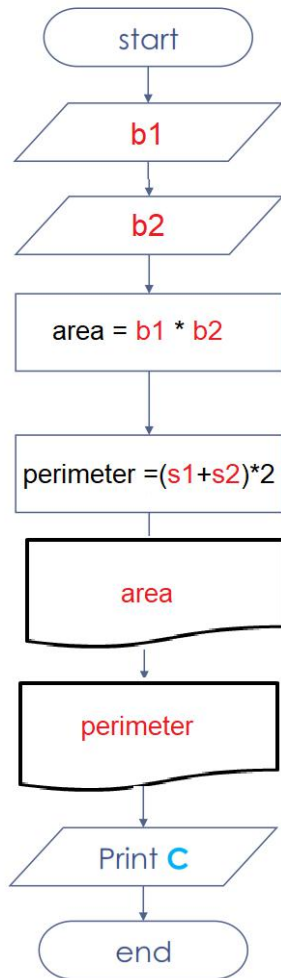
**Q2.a: Draw the flow chart and write a C++ program to find the Area and Perimeter of a Rectangle using the below formulae. Area of rectangle: height*width
Perimeter of rectangle: 2*(height + width)**

Draw the flow chart and write a C++ program to find the Area and Perimeter of a Rectangle using the below formula

5

Area of rectangle: **height*width**

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



```

#include <iostream>
using namespace std;
int main()
{
int width, lngth, 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 << endl;
cout<<" The perimeter of the rectangle is : "<< peri << endl;
cout << endl;
return 0;
}

```

Sample Output:

Find the Area and Perimeter of a Rectangle :

```

-----
Input the length of the rectangle : 10
Input the width of the rectangle : 15
The area of the rectangle is : 150
The perimeter of the rectangle is : 50

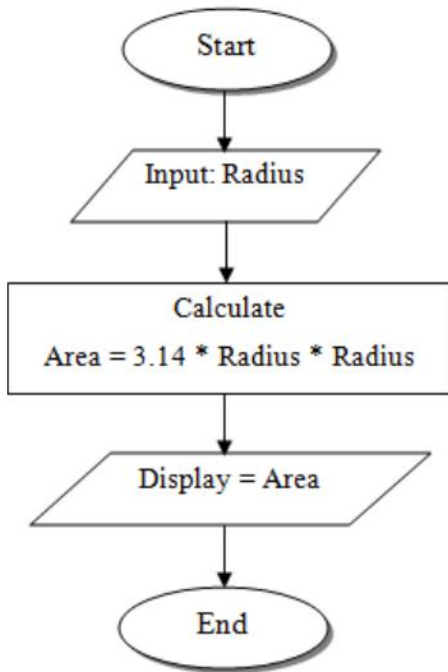
```

Q2.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 = $\pi * R * R$

Circumference formula $C = 2 * \pi * R$. where $\pi = 3.14$



```

#include <iostream>
#define PI 3.14159
using namespace std;

int main()
{
    float radius, area, circum;
    cout << "\n\n Find the area and circumference of any
circle :\n";
    cout << "-----\n";
    cout<<" Input the radius(1/2 of diameter) of a circle : ";
    cin>>radius;
    circum = 2*PI*radius;
    area = PI*(radius*radius);
    cout<<" The area of the circle is : "<< area << endl;
    cout<<" The circumference of the circle is : "<< circum <<
endl;    cout << endl;
    return 0;
}
Find the area and circumference of any circle :
-----
Input the radius(1/2 of diameter) of a circle : 5
The area of the circle is : 78.5397
The circumference of the circle is : 31.4159
  
```

Q3.a: Discuss different types of programming languages?

Ans: Types of Programming Languages:

There are two types of programming languages, which can be categorized into the following ways:

1. Low level language

- a) Machine language (1GL)
- b) Assembly language (2GL)

2. High level language

- a) Procedural-Oriented language (3GL)
- b) Problem-Oriented language (4GL)
- c) Natural language (5GL)

1. Low level language

This language is the most understandable language used by computer to perform its operations.

2. High level language

Instructions of this language closely resembles to human language or English like words. It uses mathematical notations to perform the task. The high level language is easier to learn. It requires less time to write and is easier to maintain the errors. The high level language is converted into machine language by one of the two different languages translator programs; **interpreter or compiler**.

Q3.b: How many translators are there to translate higher level language to machine language? Discuss.

Ans: In general, any translation program that converts a High Level language to another language is called a "**compiler**".

Typically this compilation is done from a high level language such as C++ to a low level machine language such as 'NASM Syntax' or any other 'assembly language'. In addition to this, the compiler performs certain code immunizations during the compilation stage.

After the assembly code is generated by the compiler, another program called an "Assembler" converts the assembly code into the zeroes and ones that a computer can understand.

Hence by 'machine language' if you are referring to assembly code then its a Compiler. But if you are referring to the final zeroes and ones then its a combination of two translation programs, a Compiler and then an Assembler.