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Introduction to Computer
and programming

Q#1

P-1

Answer

- 1) if the average is greater than 80 then the grade is A.
- 2) if the average is less than 50 and greater than 33 then the grade is C.
- 3) if the average is less than 80 and greater than 50 then the grade is B.
- 4) if the average is less than 33 then the grade is F.

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

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

```
main ( )
```

```
{
```

```
clrscr ( );
```

```
int sub 1, sub2, sub3;
```

```
float average ;
```

```
char grade;
```

```
cout << "Enter the marks of subject 1=";
```

```
cin >> sub1;
```

```
cout << "Enter the marks of sub2=";
```

```
cin >> sub2;
```

cout << "Enter the marks of sub3";

cin >> subject3;

Average = (subject 1 + subject 2 + subject 3) / 3 . 0;

if (average > 33)

if (average > 50)

if (average > 80)

grade = 'A';

else

grade = 'B';

else

grade = 'C';

else

grade = 'F';

```
cout << " Average = " average << endl;
```

```
cout << "Grade = " << grade;
```

```
getch ();
```

```
}
```

Q1
Part B:

if Statement

The if statement consist of expression on an expression can contain value operators, constants or variable.

if the evaluated expression is true, then the statement inside the if block

if-else-Statement

in if else statement there are two block. The if statement contain an expression to evaluate.

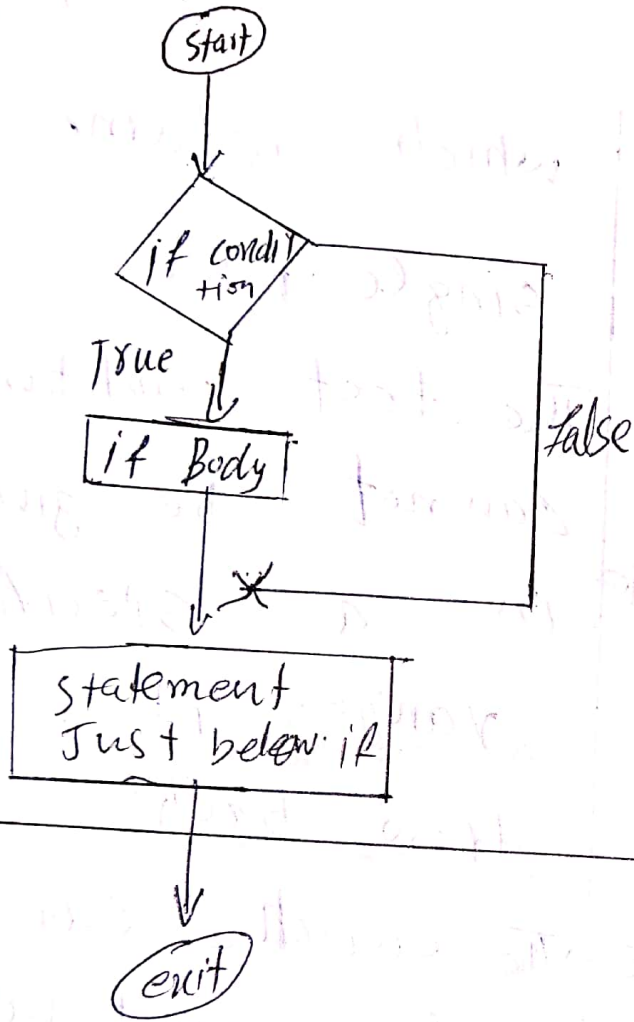
if the evaluated expression is true. Then the statement inside the if block execute

2) The if statement is a ~~decision~~ decision making structure that consists of an expression followed by one or more statements

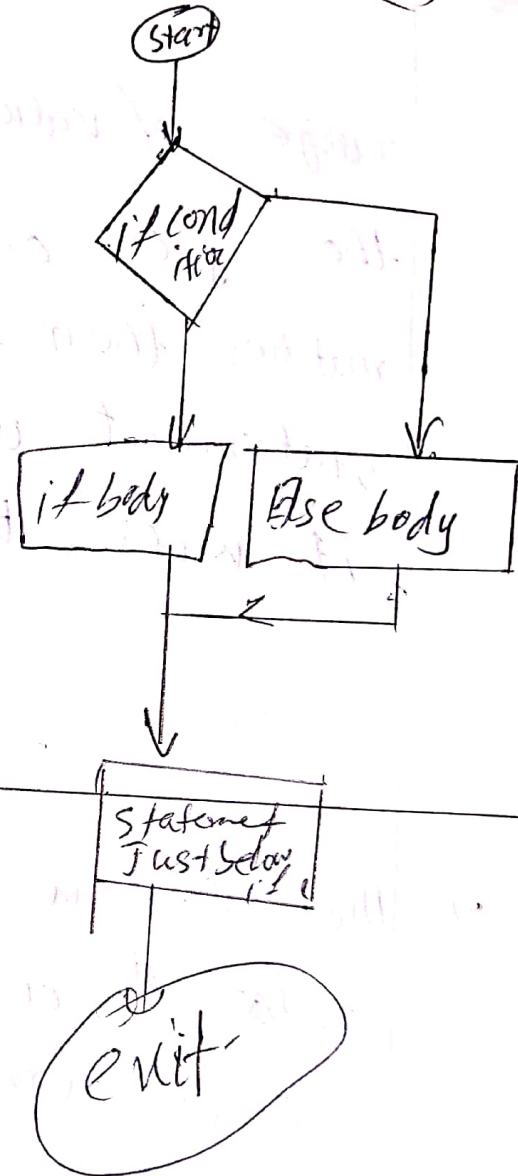
2) In if the statement inside the if block executes if the expression is true. If the next expression is false the next statement ~~executes~~ after the if block ~~executes~~

10-5
2) The if else statement decision-making structure in which the statement can be followed by an optional else statement that executes when the expression is false

→ In if else statement the if block executes if the expression is true and if the expression is false the control is passed to the else block.



(6)



Q#2

Part

(A)

Answer

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

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

```
main()
```

```
{
```

```
clrscr();
```

```
int choice;
```

```
cout << "\n: program to input data" << endl;
```

```
cout << "\n: program to print data" << endl;
```

```
cout << "\n: program to general report" << endl;
```

```
cout << "\n: End" << endl << endl;
```

```
cout << "\n Enter your's choice [1-4]";
```



```
cin >> choice;
```

```
switch (choice)
```

```
{
```

```
    case: 1
```

```
    cout << " you have selected the first option";
```

```
    break;
```

```
    case: 2
```

```
    cout << " you have selected the second option";
```

```
    break;
```

```
    case: 3
```

```
    cout << " you have selected the third option";
```

```
    break;
```

```
    case: 4
```

```
    cout << " you have selected the fourth option";
```

```
    break;
```

cout << "An OK;"

getch ();

}

Q42 Nested-if-else statement

Switch Statement

Part B

1) it become a complicated for multiple selection

it is easy to understand for multiple selection

2) if uses in independent expression for each case

→ It uses a single expression for all cases must have a constant value of integer types or character type

→ 3 The test condition can be given in a special

→ only a single expression is given in the switch.

range of value. if the given condition matches then the statement under it will be executed

which returns a single value.

The test condition can not be given in a specified range. it is draw back.

→ The if can evaluate relational or logical expression

→ The switch() can test only constant value

→ if nested if statement, switch can be used.

In switch() case statement nested if can be use

syntax
switch (variable || constant
|| character)

when an if else structure is placed in another

case 1
statement 1;
statement 2;
break;

syntax
if (condition-1)
statement -1;
else if (condition-2):
statement -2;

Q#3
Part
A)

Ans

Relational operator

Relational Expression

Relation operator can
are used to compare
value of two expression
depend on their relation

An expression that
contains relational
operator is called
relational expression.

→ and if the relation
is false then the
value of expression
is 0. The relation
operator are

→ if the relation is
true the value of
relation expression
is 1

< Less than
> Greater than

<= Less than or
equal

>= Greater than or
equal

= is equal +

!= is not equal to

Relational expression

is a combination
of two primitive
types separated

by a relational
operator.

A relational expression
yields a value of 1 or 0

$$5 < 6$$

$$-34 + 8 > 23 - 5$$

if $a = 3, b = 2, c = 1;$

then $a > b > c$ is?

the associativity
of relational
operators is
Left \rightarrow right

The result from
evaluating the expression
is one of the boolean
value true or false

The General form of
simple conditional
statement is
- Left - operand
Relational operator
Right operand
Example $10 > 15$

"a" := A

operator	Meaning	expression	value
$>$	is greater than	$6 > 4$	true
$>=$	is greater than or equal to	$7 >= 6$	true
$<$	less than	$8 < 11$	false
$<=$	less than or equal	$5 <= 5$	true

Operators and expression

The symbols which are used to perform logical and mathematical operations in a C program are called C operators.

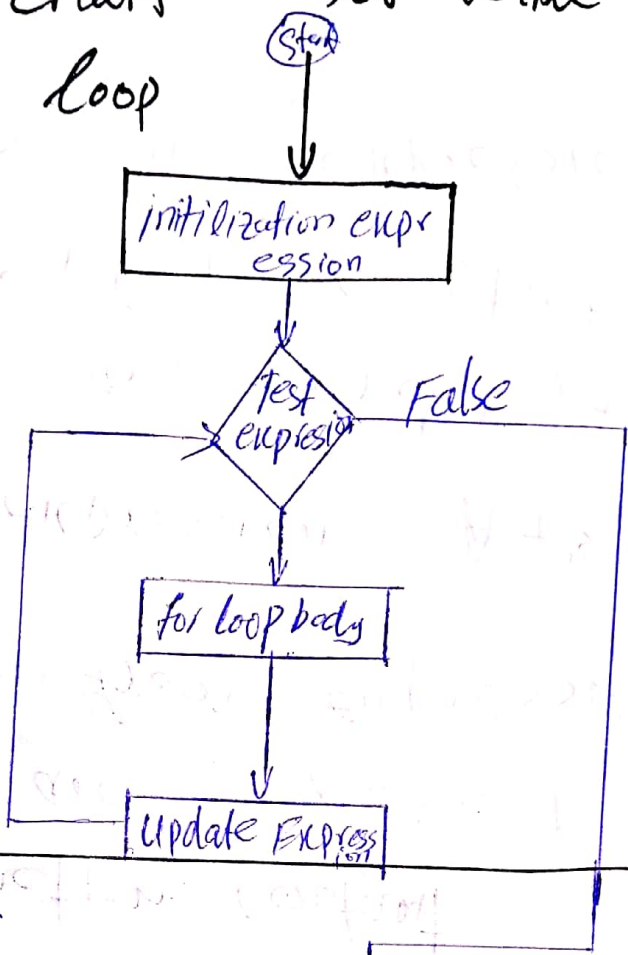
→ The C operator joins individual constants and variables to form expressions.

→ Operator, function, constant and variable are combined together to form expressions.

→ Consider the expression $A + B * 5$ where $+$, $*$ are operators, A , B are variables, 5 is constant and $A + B * 5$ is an expression.

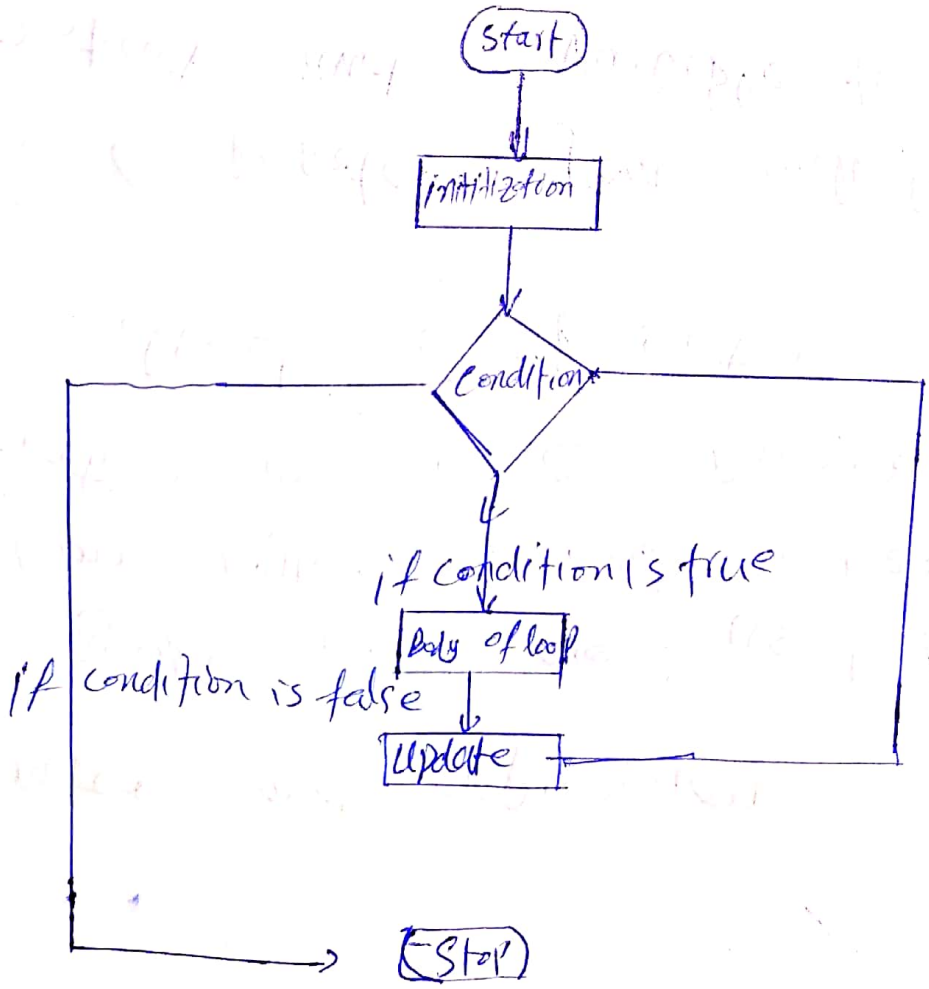
Flow chart for while loop

Q#3
Part
b)



OR

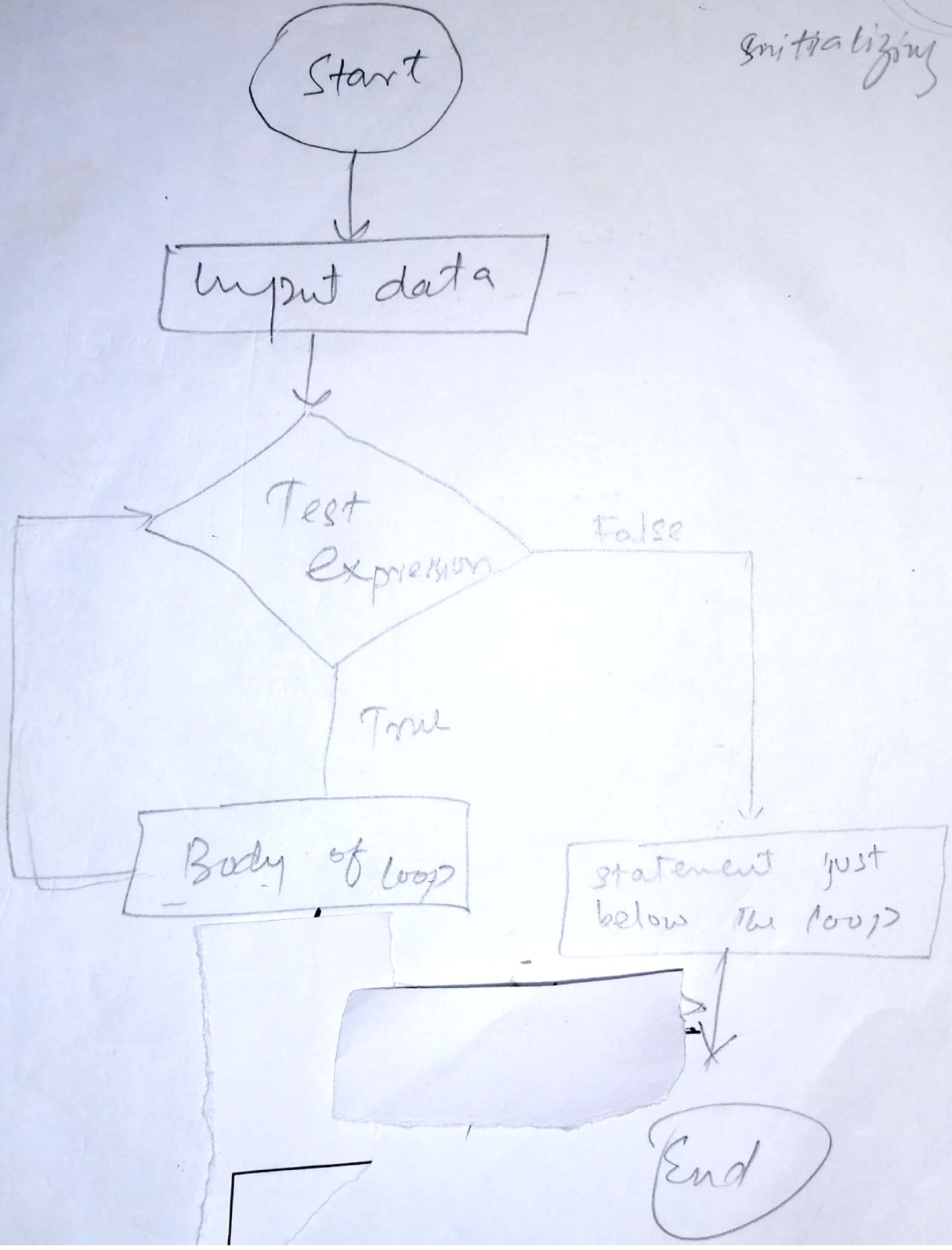
while loop



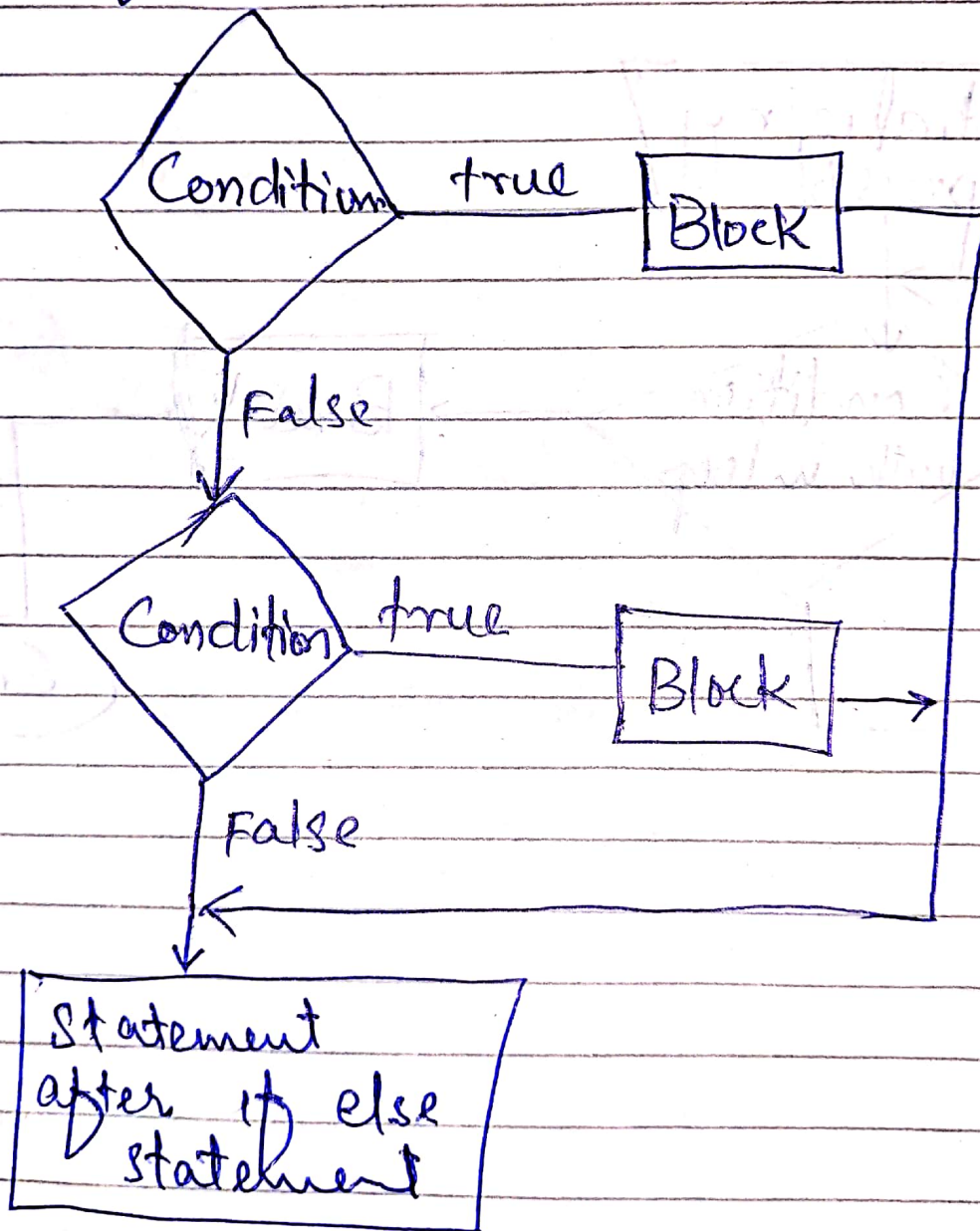
Flow chart of while loop

while loop

initializing

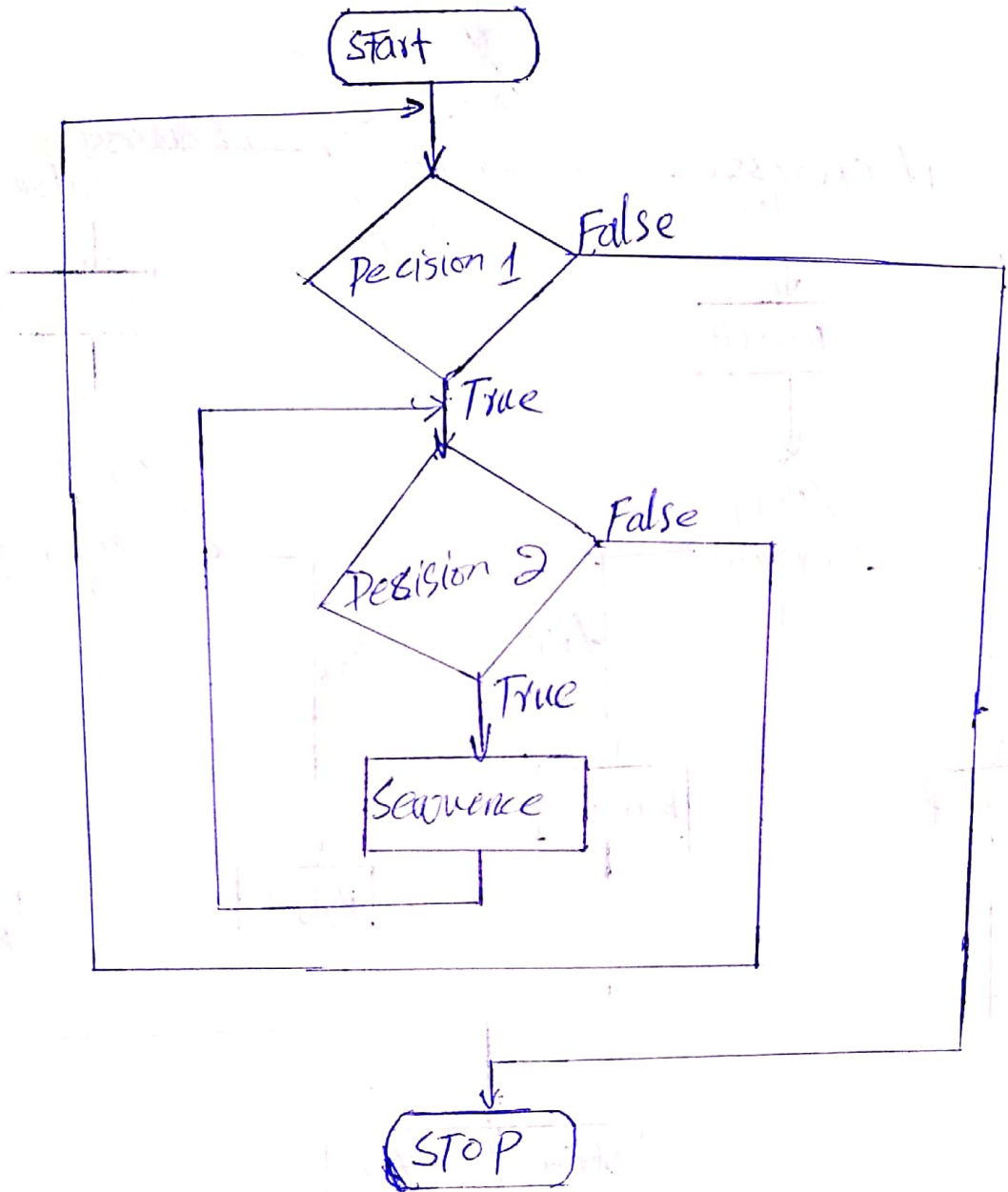


Nested if else - Statement

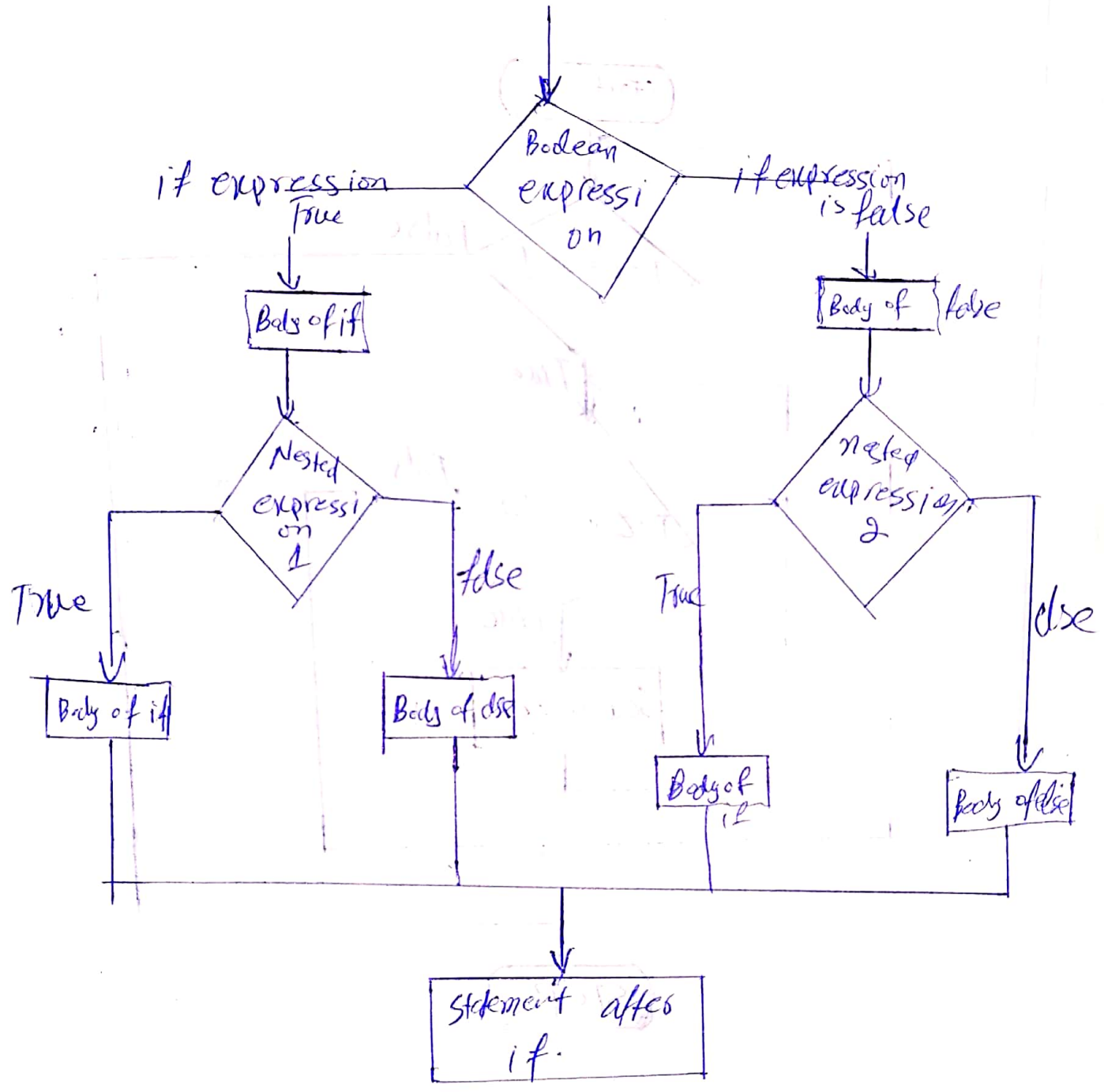


Flow chart of Nested if else statement

14



while loop neste for if statement



Q# 2
Part
a)

Volume of cylinder:

14

Answer

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

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

```
main()
```

```
{
```

```
clrscr
```

```
cout << "Enter the radius =";
```

```
cin >> radius;
```

```
cout << "Enter the height =";
```

```
cin >> height;
```

11

∴ to employ volume of cylinder

$$\text{Volume} = 3.14 * r * r * h;$$

```

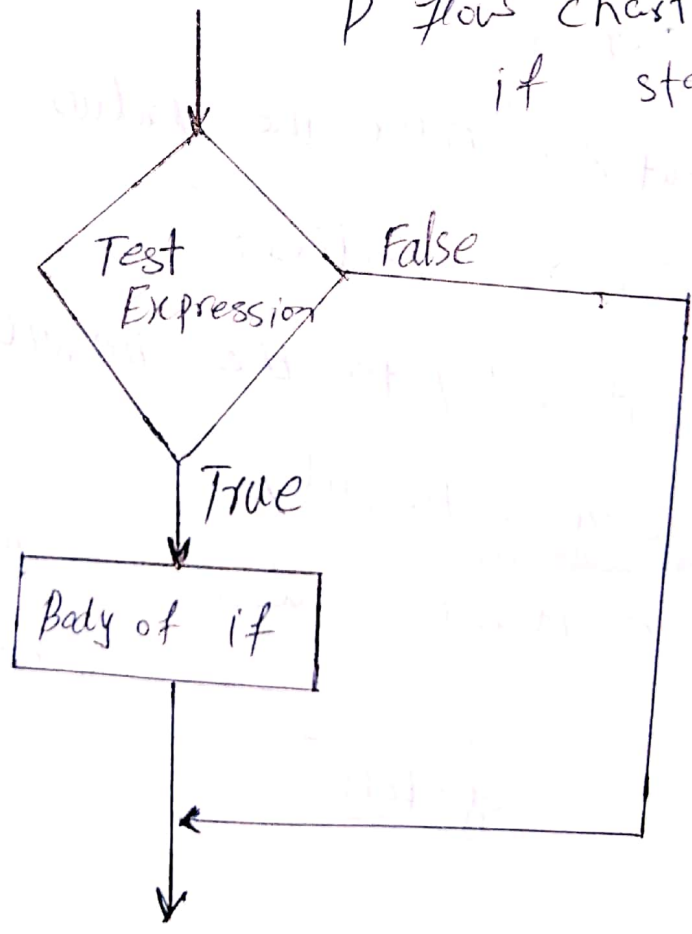
cout << "volume of the cylinder=" << volume;
getch;
}

```

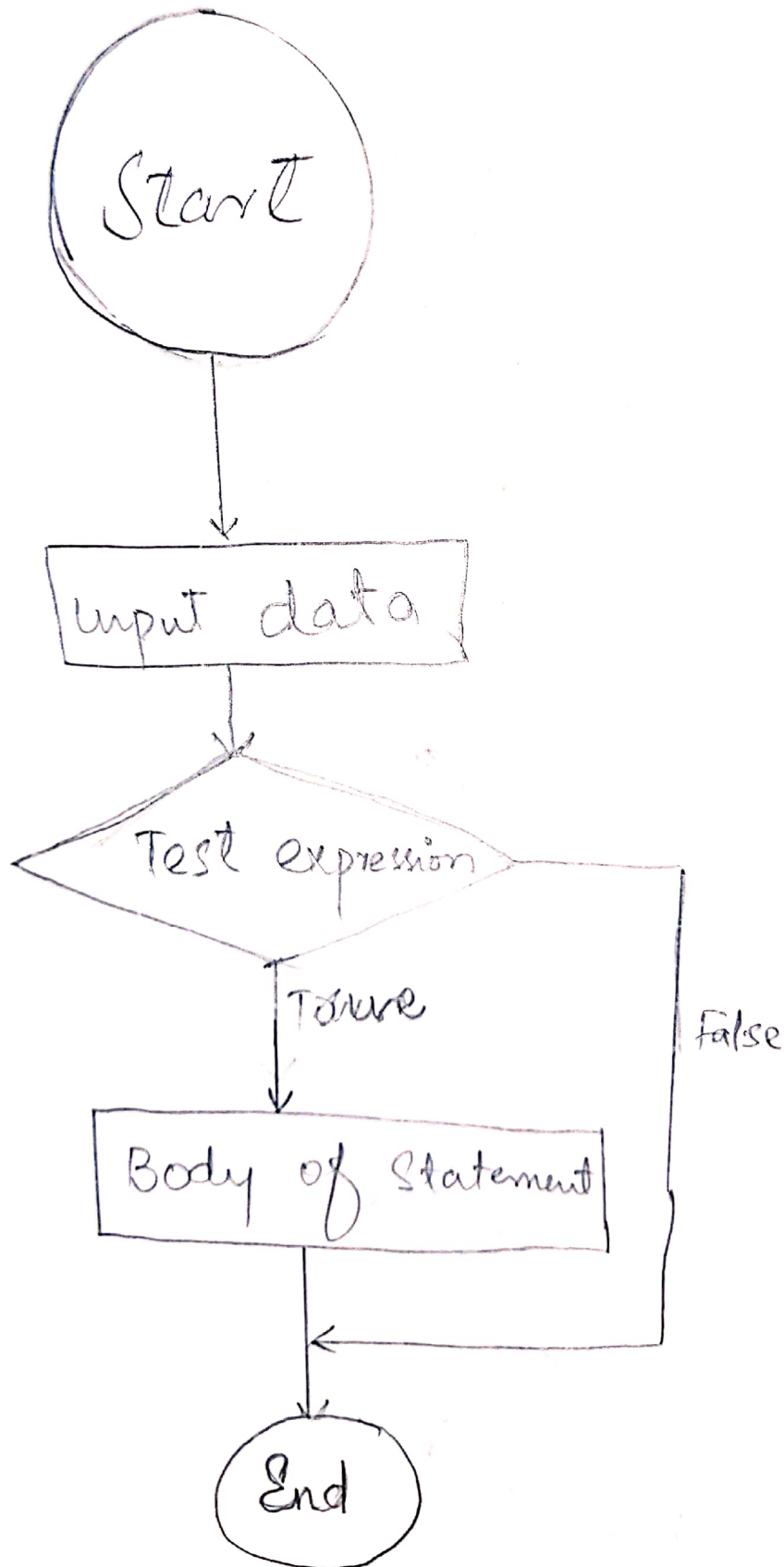
P-15
Q#4
Part (b)

Q#4
Part (b)

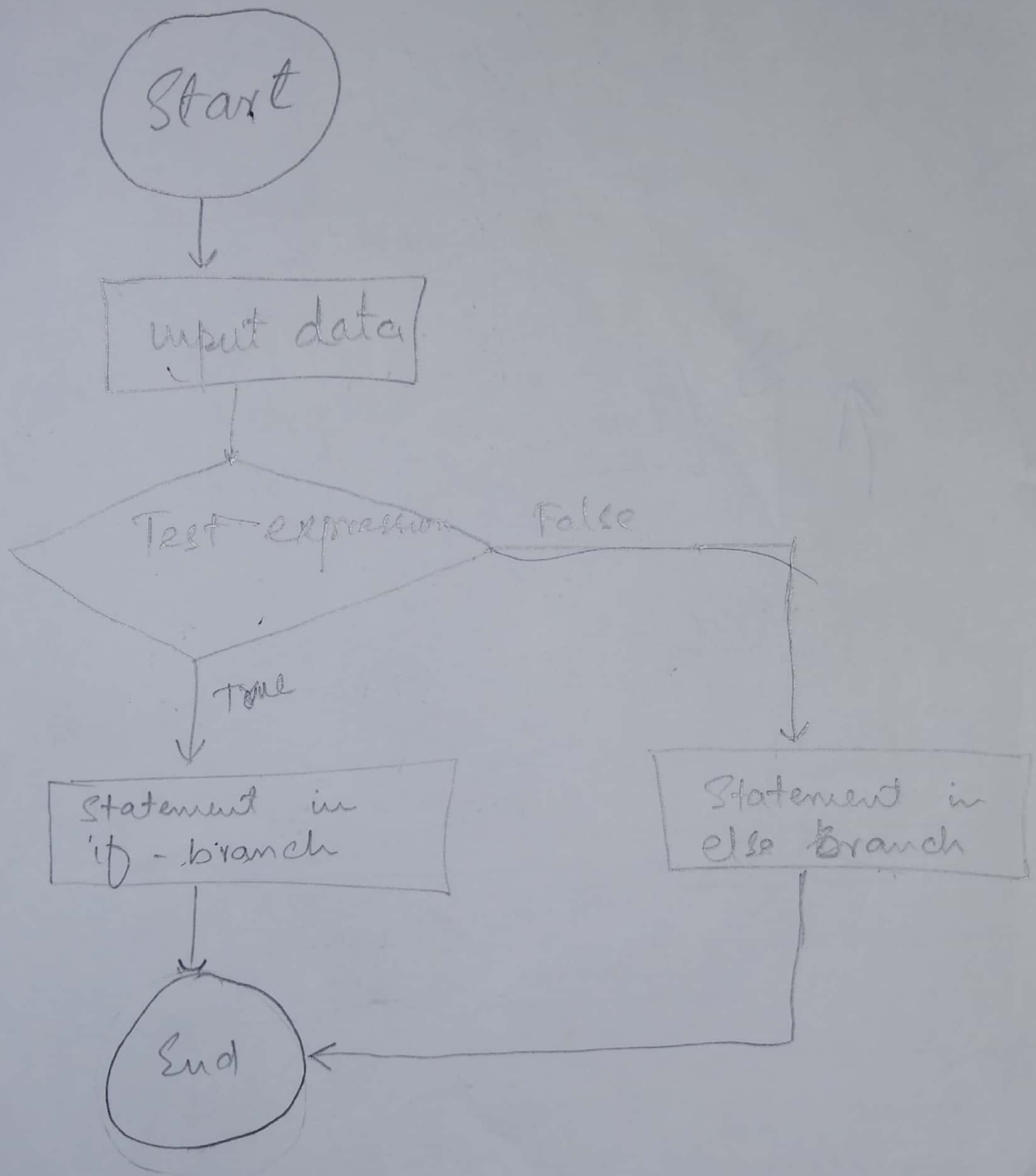
Flow chart of if statement



Flowchart of if-statement



Flow chart of if-else Statement.



Q#5
Part
A
Ans
wer

What is Sequential statement

=> Sequential statements are assignment statements that assign values to variables and signals. Flow control statements that conditionally execute statement (if and case), repeat statement (for -- loop), and

skip

statement (next and exit).

Generally sequence of statement are written in order to accomplish a specific activity

So statement are executed in the order they are

specified in the program. This way of executing statement sequentially is known as sequentially control statement.

→ There is an advantage that is no separate control statement are needed in order to execute the statement one after other.

→ Disadvantage is that there is no way to change the sequence.

The solution for this is branching

we are already aware of the branching and loop control structure but the reasons for their existence is the sequential flow of execution which troubles than

than when we have to work
 when we have to work ~~to~~ on lot
 of data and activities to follow

We have already studied all
 basic branch branches and loop
 control structure and sample
 program are also explained

Sequential nature of C program
 is one of the basic reasons behind
 the birth of other programming
 language like C++ Java etc.

⇒ sequential statement like $A := 3$
 are interpreted one after another
 in which they are written
 VHPL sequential statement

Can appear only in a process
or subprogram

A VHDL process is a group
of sequential statements, consider
the program is procedure
or function

Examples

if sel = 0 then

result <= input_0; --

executed if sel = 0

else

result <= input_1; executed if

sel /= 0

end if

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QHS

Part b

Answer

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

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

```
main ()
```

```
{
```

```
clrscr()
```

```
int
```

```
addition, subtraction, multiplication and division;
```

```
float remainder;
```

```
a = 5; b = 2;
```

```
addition = 5 + 2;
```

```
subtraction = 5 - 2;
```

```
multiplication = 5 * 2;
```

```
Division = 5 / 2;
```

```
remainder = 5 % 2;
```

cout << "Addition of 5 and

2" << addition << endl;

cout << "subtraction of 5 and

2" << subtraction << endl;

cout << "multiplication of 5 and 2" <<

multiplication << endl;

cout << "division of 5 and 2" <<

division << endl;

cout << "Remainder of 5 and

2" << remainder;

}

the end.