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UNIVERSITY
RAMRAO ADIK
INSTITUTE OF TECHNOLOGY
NAVI MUMBAI

Grade:
Sign:
Date:

EXPERIMENT NO. 1

A+

Name: Sunidhishree Prabakaran
Roll no: 22CE1116
Batch: B3
Branch: CE core.

Experiment - I

Write a program to accept basic salary from the keyboard. Calculate the gross salary that includes basic salary, 50% DA and 40% HRA.

Theory

The basic operators for performing arithmetic operations are the same in many computer languages. The arithmetic operators used for the arithmetic operations are as follows:

Operator	operation
+	Addition
-	Subtraction
*	Multiplication
/	Division

'+' operator : This operator is used to add two numbers a+b

'-' operator : This operator is used to subtract two numbers a-b

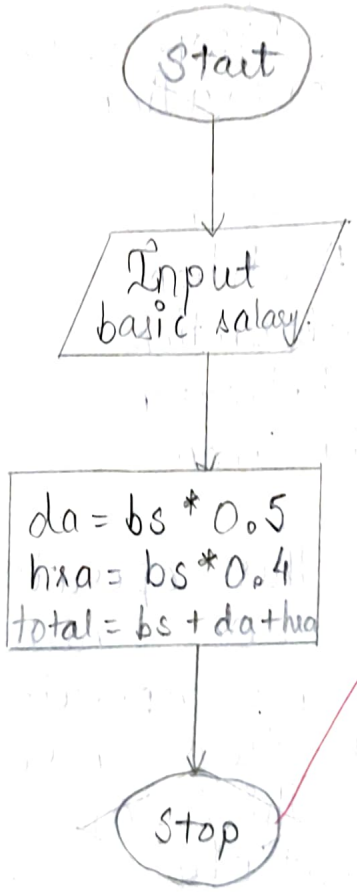
'*' operator : This operator is used to multiply two numbers a*b

'/' operator : When applied to integers, the division operator discard any remainder.

Algorithm

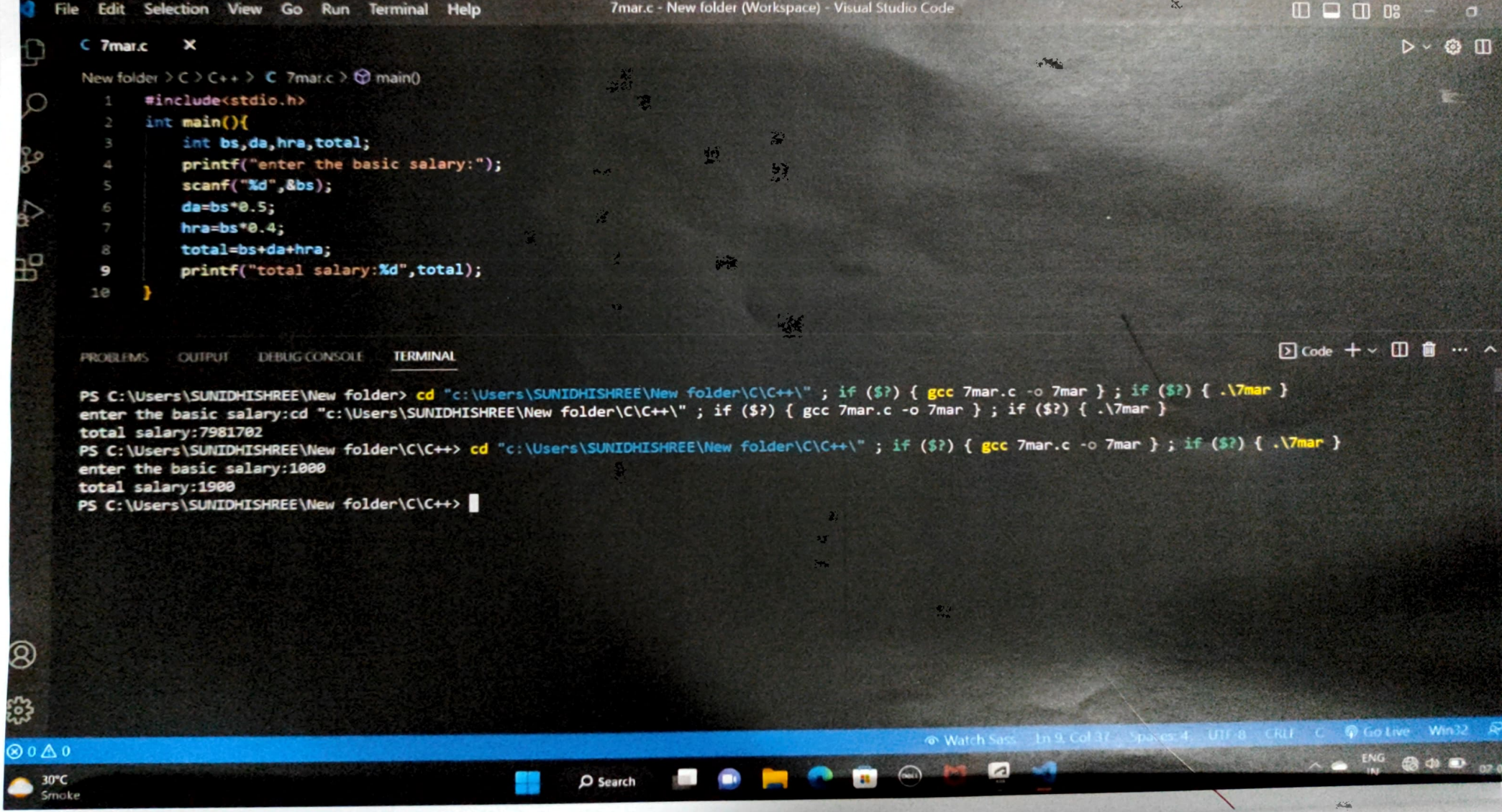
Step 1: Start
Step 2: Declare the variables
Step 3: Input the value of basic salary (bs)
Step 4: da = bs * 0.5
Step 5: hra = bs * 0.4
Step 6: total = bs + da + hra
Step 7: Print "total"
Step 8: Stop

Flowchart



Category	Operator	Associativity
Postfix	() [] -> ++ --	Left to right
Unary	+ - ! ~ ++ --	Right to Left
Multiplicative	* / %	Left to right
Additive	+ -	Left to right
Shift	<< >>	Left to right
Relational	<< = >> =	Left to right
Equality	== !=	Left to right
Bitwise AND	&	Left to right
Bitwise XOR	^	Left to right
Bitwise OR	|	Left to right
Logical AND	&&	Left to right
Logical OR	||	Left to right
Conditional	? :	Right to left
Assignment	= + = - = * = / = >> =	Right to left
Comma	,	Left to right

Conclusion:
In this program, we have calculated the gross salary.


File Edit Selection View Go Run Terminal Help
7mar.c - New folder (Workspace) - Visual Studio Code
7mar.c
New folder > C > C++ > 7mar.c > main()
#include<stdio.h>
int main(){
int bs,da,hra,total;
printf("enter the basic salary:");
scanf("%d",&bs);
da=bs*0.5;
hra=bs*0.4;
total=bs+da+hra;
printf("total salary:%d",total);
}
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Code
PS C:\Users\SUNIDHISHREE\New folder> cd "c:\Users\SUNIDHISHREE\New folder\C\C++\" ; if ($?) { gcc 7mar.c -o 7mar } ; if ($?) { .\7mar }
enter the basic salary:cd "c:\Users\SUNIDHISHREE\New folder\C\C++\" ; if ($?) { gcc 7mar.c -o 7mar } ; if ($?) { .\7mar }
total salary:7981702
PS C:\Users\SUNIDHISHREE\New folder\C\C++> cd "c:\Users\SUNIDHISHREE\New folder\C\C++\" ; if ($?) { gcc 7mar.c -o 7mar } ; if ($?) { .\7mar }
enter the basic salary:1000
total salary:1900
PS C:\Users\SUNIDHISHREE\New folder\C\C++>
Watch Sass Ln 9, Col 37 Spaces: 4 UTF-8 CRLF C Go Live Win32
0 0
30°C Smoke
Search
ENG IN

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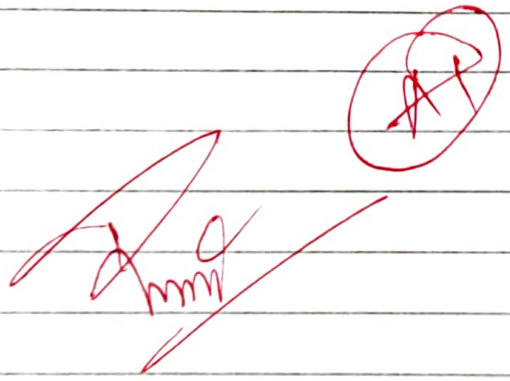
EXPERIMENT NO. 2



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Experiment II

Write a program to display class of students according to range.

Theory:
The if-else ladder is used when there are multiple conditional statements that may all evaluate to true, yet you want only one if statement's body to execute. You can use an "else if" statement following an if statement and its body; that way, if the first statement is true, the "else if" will be ignored, but if the statement is false, it will then check the condition for the else if statement.

Syntax:

```
If (condition)
{
    Statements
}
else if (condition)
{
    Statements.
```

Algorithm.

Step 1 : Start
Step 2 : Declare the variables
Step 3 : Input the marks of 5 sub
Step 4 : Percentage = (Total max marks /
Total obtained mark
Step 5 : If Percentage > 75 then
print "Grade A+" and if not go
to step 6
Step 6 : If 75 > Percentage >= 60 th
print "Grade B" and if not g
to step 7
Step 7 : If 60 > Percentage >= 50 t
print "Grade B" and if not go
step 8
Step 8 : If 50 > Percentage >= 40
print "Grade C" and if not go
step 9
Step 9 : If 40 > Percentage then
print "Fail"
Step 10 : Stop

```
    }
.
.
 else
  {
    statements
  }
```

The grade of student is calculated from the percentage obtained.

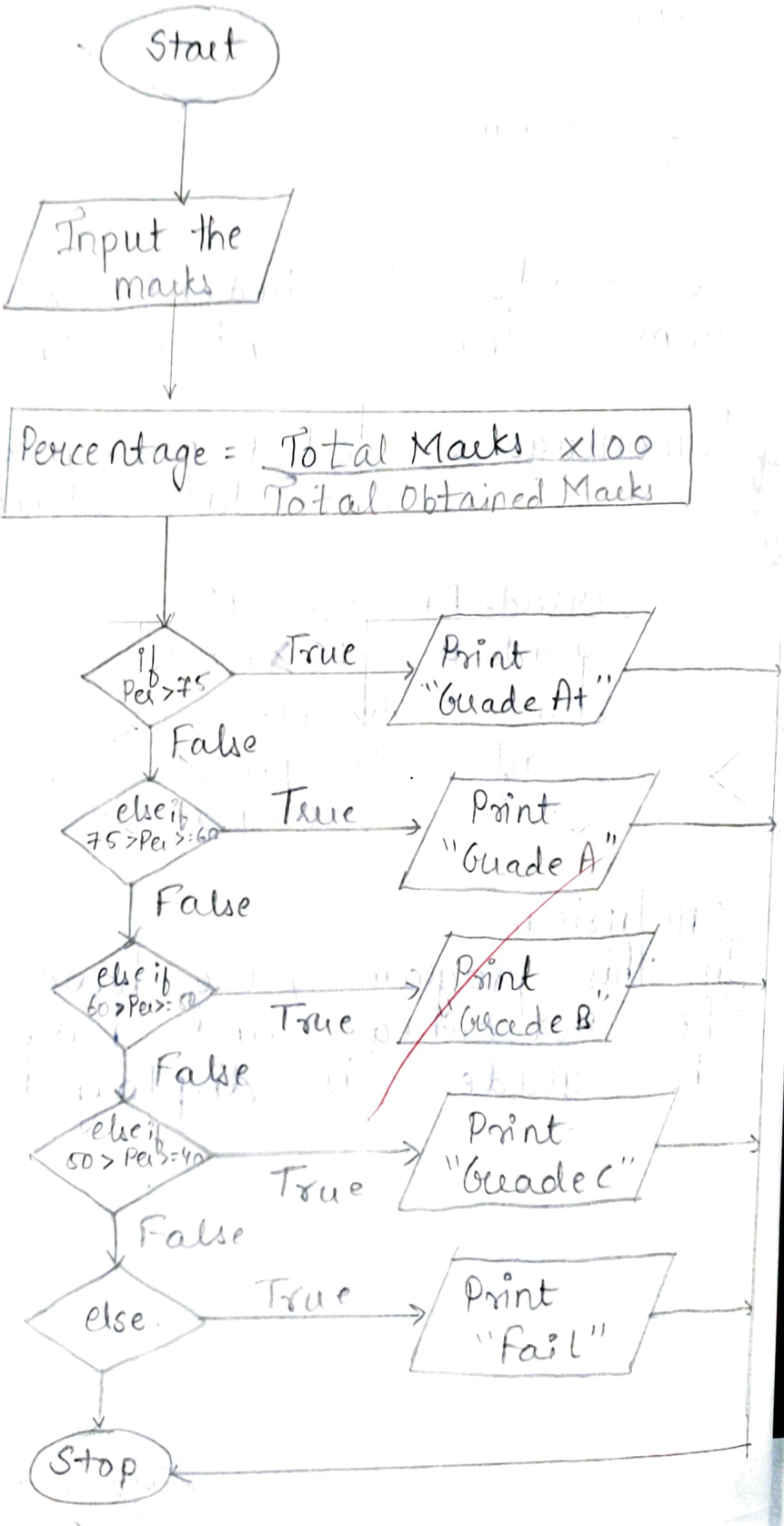
Percentage = $\frac{\text{Total maximum marks} \times 100}{\text{Total obtained marks}}$

Grade A+	per > 75
Grade A	75 ≥ per >= 60
Grade B	60 > per >= 50
Grade C	50 > per >= 40
Fail	40 > per

Conclusion

In this program, we have calculated the percentage and based on it the grade is displayed.

Flowchart


Start
Input the marks
Percentage = Total Marks x100 / Total Obtained Marks
if Per>75
True
Print "Grade A+"
False
else if 75>Per>=60
True
Print "Grade A"
False
else if 60>Per>=50
True
Print "Grade B"
False
else if 50>Per>=40
True
Print "Grade C"
False
else
True
Print "Fail"
Stop

```c
#include<stdio.h>
int main()
{
int m,s,c,p,e;
float pm;
printf("enter the subject marks");
scanf("%d%d%d%d%d",&m,&s,&c,&p,&e);
pm=(m+s+c+p+e)/5;
if ((pm>0)&&(pm<=50))
printf("the grade is f");
else if ((pm>50)&&(pm<=60))
printf("the grade is d");
else if ((pm>60)&&(pm<=70))
printf("the grade is c");
else if ((pm>70)&&(pm<=80))
printf("the grade is b");
else if ((pm>80)&&(pm<=90))
printf("the grade is a");
else if ((pm>90)&&(pm<=100))
printf("the grade is a+");
else
printf("enter the valid marks");
return 0;
}
```

```
guest-syozrv@student-desktop: ~/Desktop/22ce1116
guest-syozrv@student-desktop: $ cd Desktop
guest-syozrv@student-desktop: /Desktop$ cd 22ce1116
guest-syozrv@student-desktop:~/Desktop/22ce1116$ gcc xyz.c
guest-syozrv@student-desktop:~/Desktop/22ce1116$ ./a.out
enter the  subject marks 90
100
90
60
90
the grade is aguest-syozrv@student-desktop:~/Desktop/22ce1116$
```

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EXPERIMENT NO. 3

A1

Name: Sunidhishree Prabakaran.
Batch: B3
Roll no: 22CE1116
Branch: CE Core.

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Experiment III

Write a program to check whether the entered number is Armstrong or not.

Theory:
The number for which the sum of its digits is equal to that number is known as Armstrong number.

Example 1: 153
Total digit in 153 is 3
And $1^3 + 5^3 + 3^3 = 1 + 125 + 27$
$= 153$

Example 2: 1634
Total digit in 1634 is 4
And $1^4 + 6^4 + 3^4 + 4^4 = 1 + 1296 + 81 + 64$
$= 1634$

Examples of Armstrong numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 153, 370, 371, 407, 1634, 8208, 9474, 54748, 92727, 93084, 548834

while loop in C.
While loop is also known as a pre-tested loop. In general, a while loop allows a part of the code to be executed multiple times depending

Algorithm

Step 1: Start

Step 2: Declare the variables

Step 3: Input the numbers

Step 4: Check for while condition

Step 5: If the condition is true, then it will go to step 6 or it will terminate

Step 6: If sum == n, then print "number is armstrong"

Step 7: Else it will print "number is not armstrong"

Step 8: Stop

upon a given boolean condition. It can be viewed as repeating if statement. The while loop is mostly used in the case where the number of iterations is not known in advance.

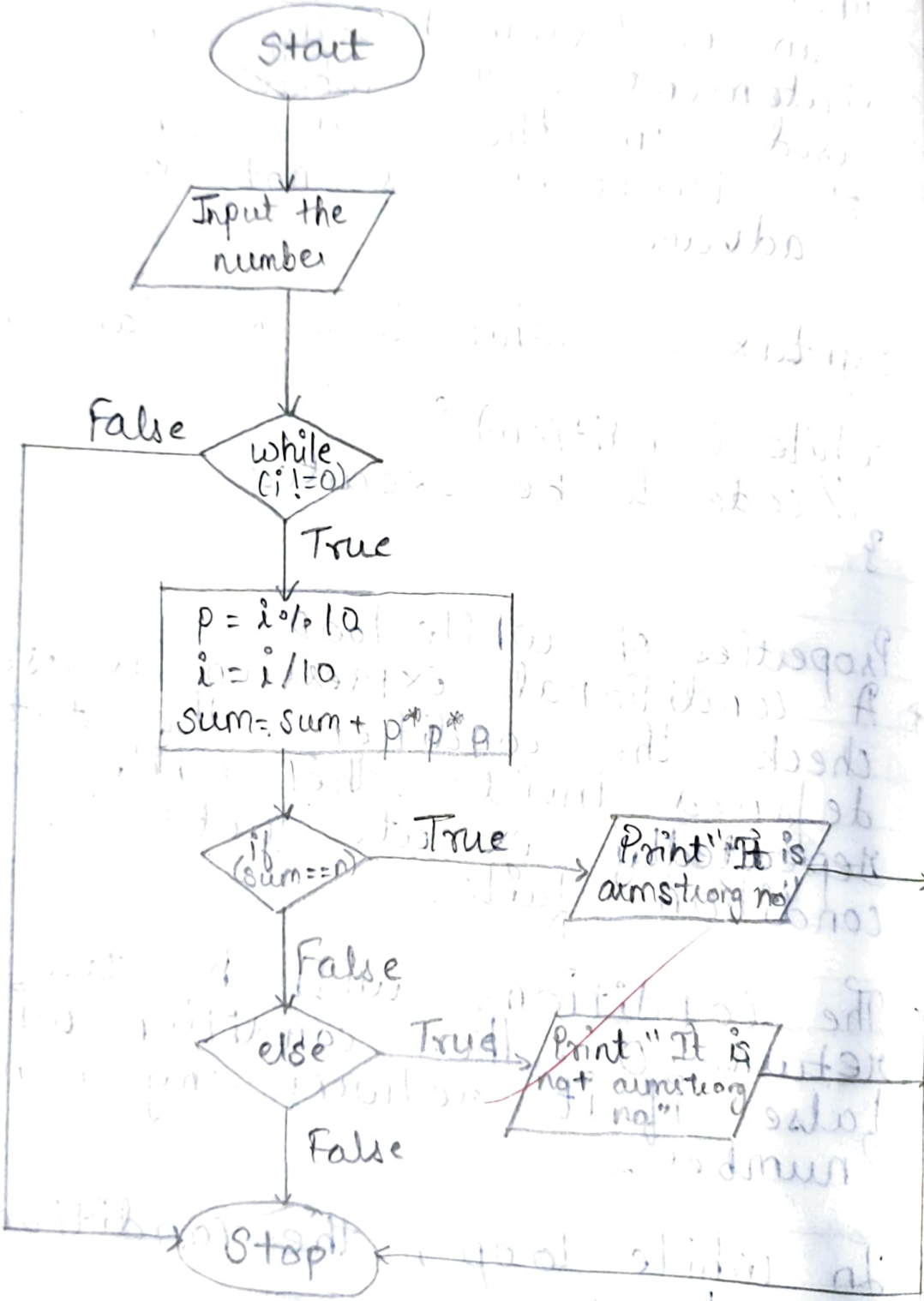
Syntax of while loop in C language

```
while (condition) {
  // code to be executed
}
```

Properties of while loop:

* A conditional expression is used to check the condition. The statements defined inside the while loop will repeatedly execute until the given condition fails.
* The condition will be true if it returns 0. The condition will be false if it returns any non-zero number.
* In while loop, the condition is compulsory.
* Running a while loop without a body is possible.

Flowchart


Start
Input the number
False
while (i!=0)
True
p = i%10
i = i/10
sum = sum + p*p*p
if (sum==n)
True
Print "It is armstrong no"
False
else
True
Print "It is not armstrong no"
False
Stop

* We can have more than one conditional expression, in while loop.
* If the loop body contains only one statement, then the braces are optional

Conclusion :
We have successfully written the program to check whether