

## Leap year

### Aim

To check whether a given year is a leap year or not.

### Algorithm

Input: A year (a 3 or 4-digit number)

Output: Conclusion of whether it is a leap year or not

Step 1: Start

Step 2: Read the year as input from the user.

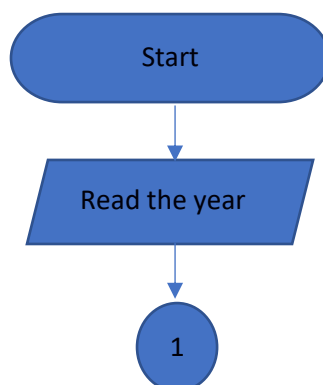
Step 3: Check if the year is divisible by 4 or 400, but not by 100.

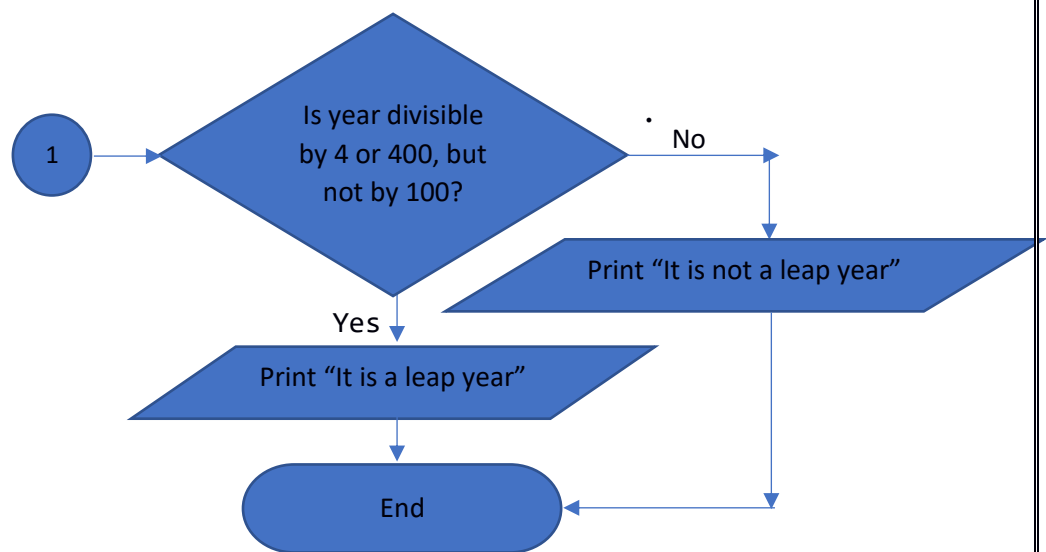
Step 4: If yes, print that it is a leap year.

Step 5: If no, print that it is not a leap year.

Step 6: End

### Flowchart





## Program

```
# Python program to check if a given year is a leap year or not.  
  
# To take year as input from the user  
year=int(input("Enter a year: "))  
if ((year%4==0 and year%100!=0) or year%400==0):  
    print("It is a leap year.")  
else:  
    print("It is not a leap year.")
```

## Output

Input:

2020, 2017, 2000, 1900

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S03018

Ex. No.: 3

---

Output:

```
Enter a year: 2020  
It is a leap year.
```

```
Enter a year: 2017  
It is not a leap year.
```

```
Enter a year: 2000  
It is a leap year.
```

```
Enter a year: 1900  
It is not a leap year.
```

## **Results / Inferences**

Program for checking whether a given year is a leap year is written and executed.

## Divisibility by 5 and 10

### Aim

To check whether a number is divisible by 5 and 10.

### Algorithm

Input: A number

Output: Its divisibility by 5 and 10

Step 1: Start

Step 2: Read the number.

Step 3: Check if the number is divisible by both 5 and 10.

Step 4: If yes, print that it is divisible by both 5 and 10.

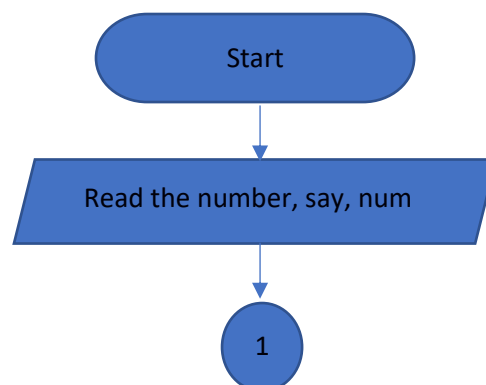
Step 5: If no, check if the number is divisible by either 5 or 10.

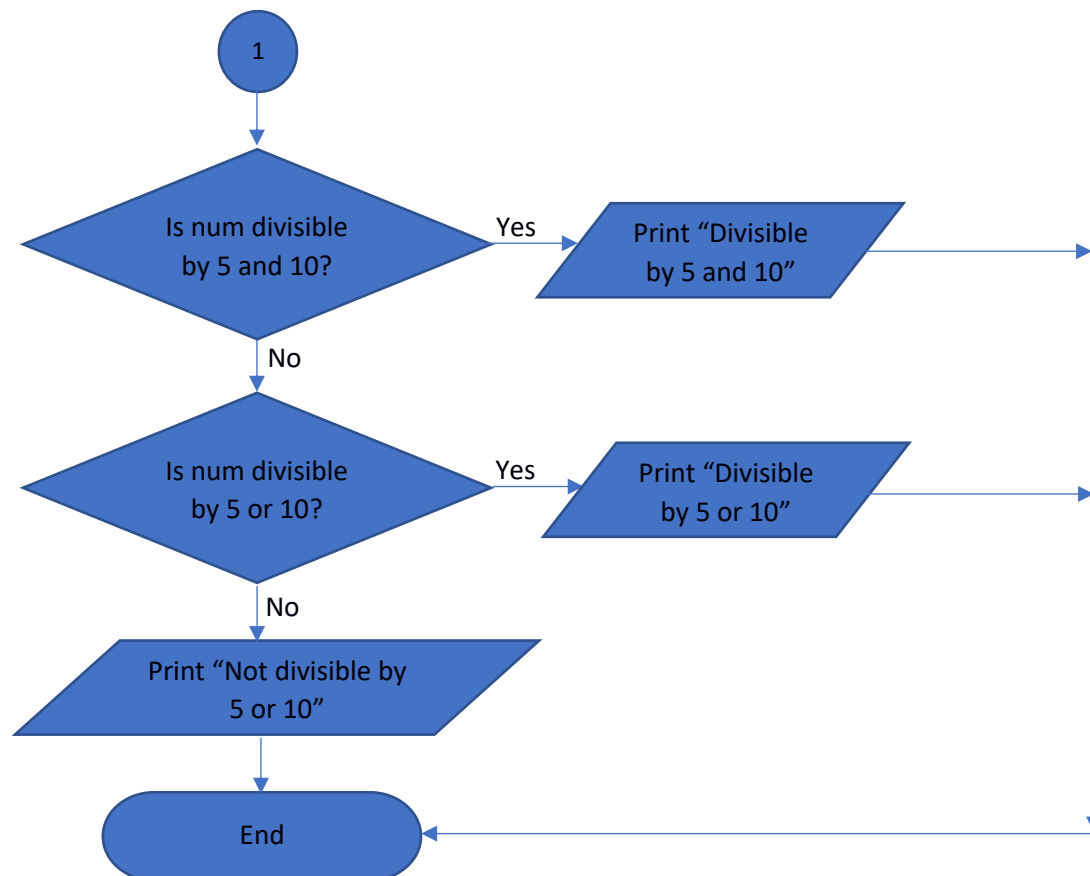
Step 6: If yes, print that it is divisible by 5 or 10.

Step 7: If no, print that it is not divisible by 5 or 10.

Step 8: End

### Flowchart





## Program

```
# Python program to check if a given number is divisible by 5 and/or 10.

# To take a number as input from the user
num=int(input("Enter the number: "))
print("Entered number is: ",num)
if (num%5==0 and num%10==0):
    print(num, "is divisible by both 5 and 10.")
elif (num%5==0 or num%10==0):
    print(num, "is divisible by 5 or 10.")
```

```
else:  
    print(num, "is not divisible by 5 or 10.")
```

## Output

Input:

62, 30, 45

Output:

```
Enter the number: 62  
Entered number is: 62  
62 is not divisible by 5 or 10.
```

```
Enter the number: 30  
Entered number is: 30  
30 is divisible by both 5 and 10.
```

```
Enter the number: 45  
Entered number is: 45  
45 is divisible by 5 or 10.
```

## Results / Inferences

Program for checking a number's divisibility by 5 and 10 is written and executed.

## Triangle type

### Aim

To find whether a triangle is equilateral, isosceles or scalene.

### Algorithm

Input: The lengths of the sides of the triangles

Output: Type of the triangle

Step 1: Start

Step 2: Read the lengths of the sides of the triangle.

Step 3: Check if all three sides are equal.

Step 4: If yes, print that it is equilateral.

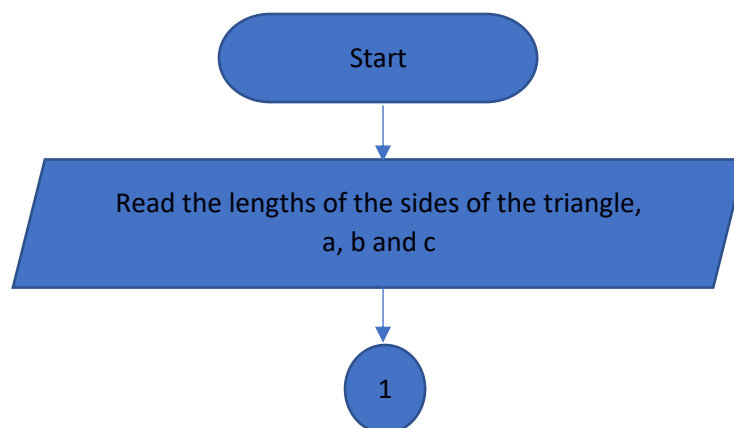
Step 5: If no, check if any two sides are equal.

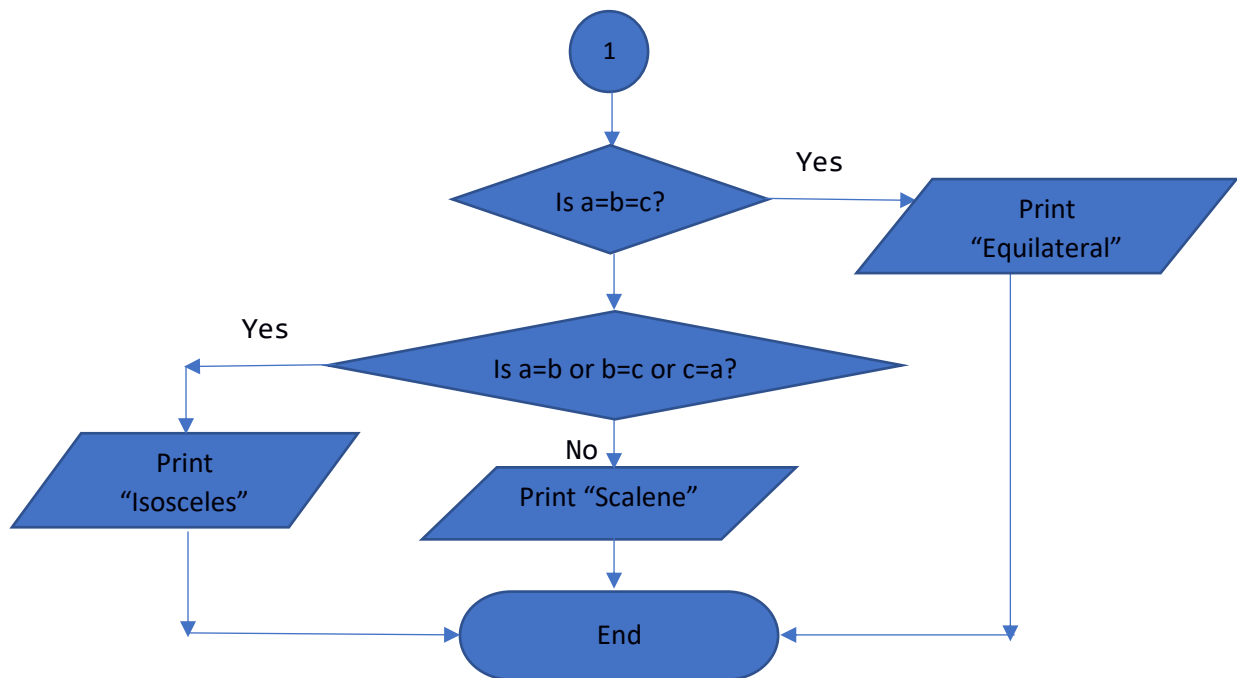
Step 6: If yes, print that it is isosceles.

Step 7: If no, print that it is scalene.

Step 8: End

### Flowchart





## Program

```
# Python program to find whether a given triangle is equilateral,
isosceles or scalene.

# To take lengths of the sides of the triangle as input from the user
print("Enter the sides of the triangle: ")
a=float(input("a="))
b=float(input("b="))
c=float(input("c="))
if (a==b and b==c and c==a):
    print("Equilateral triangle")
elif (a==b or b==c or c==a):
    print("Isosceles triangle")
else:
    print("Scalene triangle")
```



## Output

Input:

6 6 6, 5 5 4, 3 5 7

Output:

Enter the sides of the triangle:

6 6 6

Equilateral triangle

Enter the sides of the triangle:

5 5 4

Isosceles triangle

Enter the sides of the triangle:

3 5 7

Scalene triangle

## Results / Inferences

Program for finding the type of the given triangle is written and executed.

## Internet Bill amount

### Aim

To calculate the total internet bill amount based on some criteria.

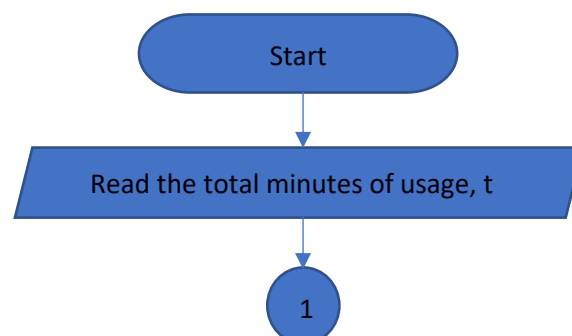
### Algorithm

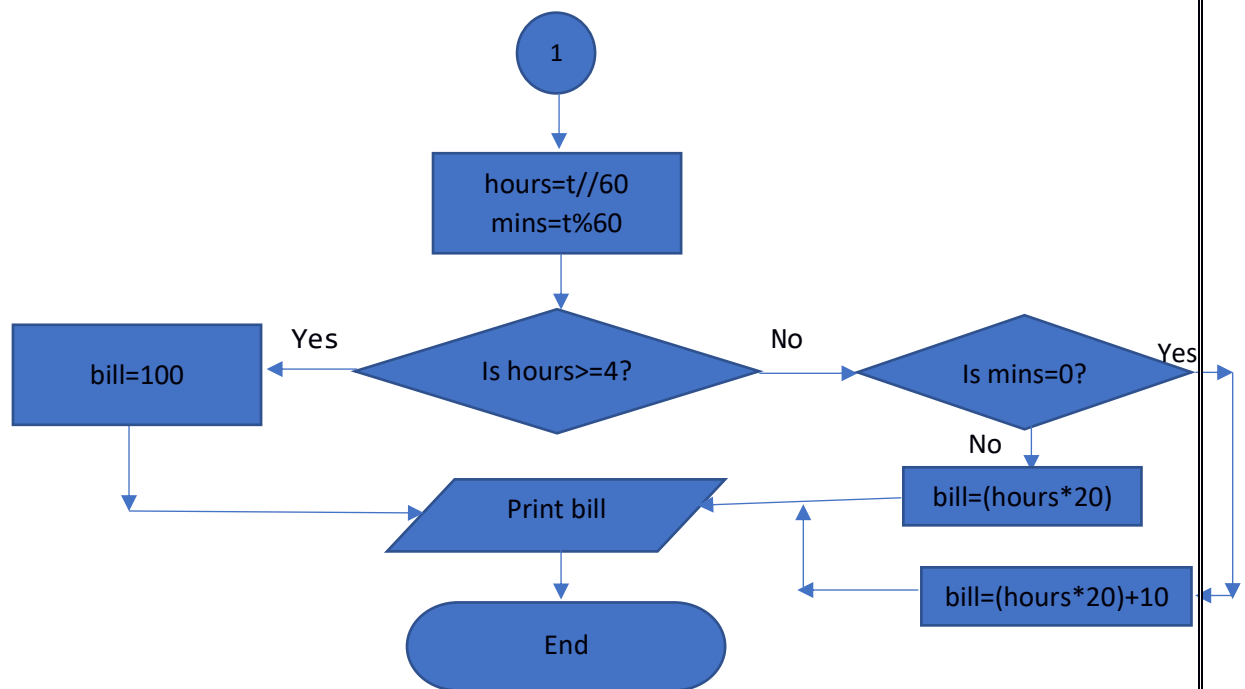
Input: The total minutes of internet usage

Output: The bill amount

- Step 1: Start
- Step 2: Read the total minutes of usage.
- Step 3: Separate the usage into hours and minutes through division by 60.
- Step 4: Check if the hours is at least 4.
- Step 5: If yes, the standard bill amount is 100.
- Step 6: If no, check if there are extra minutes.
- Step 7: If yes, calculate bill amount as  $(\text{hours} * 20) + 10$ .
- Step 8: If no, calculate bill amount as  $(\text{hours} * 20)$ .
- Step 9: Print the bill amount.
- Step 10: End

### Flowchart





## Program

```
# Python program to calculate the total bill amount.

# To take total minutes of internet usage as input from the user
use=int(input("Enter number of minutes of Internet browsing: "))
hours=use//60
mins=use%60
if (hours>=4):
    bill=100
elif (mins==0):
    bill=hours*20
elif (mins!=0):
    bill=(hours*20)+10
# To print the total bill amount
```

```
print("The bill amounts to Rs.",bill)
```

## **Output**

Input:

120, 125, 240, 255

Output:

```
Enter number of minutes of Internet browsing: 120
The bill amounts to Rs. 40
```

```
Enter number of minutes of Internet browsing: 125
The bill amounts to Rs. 50
```

```
Enter number of minutes of Internet browsing: 240
The bill amounts to Rs. 100
```

```
Enter number of minutes of Internet browsing: 255
The bill amounts to Rs. 100
```

## **Results / Inferences**

Program for calculating the internet bill amount is written and executed.

## **Basic Operations**

### **Aim**

To perform basic operations.

### **Algorithm**

Input: Two operands and a choice of operator

Output: Result of the binary operation

Step 1: Start

Step 2: Read the numbers input by the user.

Step 3: Offer a choice of operators for the user and read the choice.

Step 4: If the choice is addition, calculate and print the sum of the two numbers.

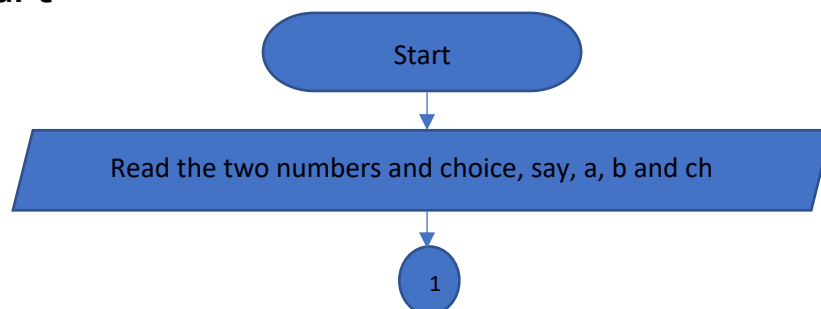
Step 5: If the choice is subtraction, calculate and print the difference of the two numbers.

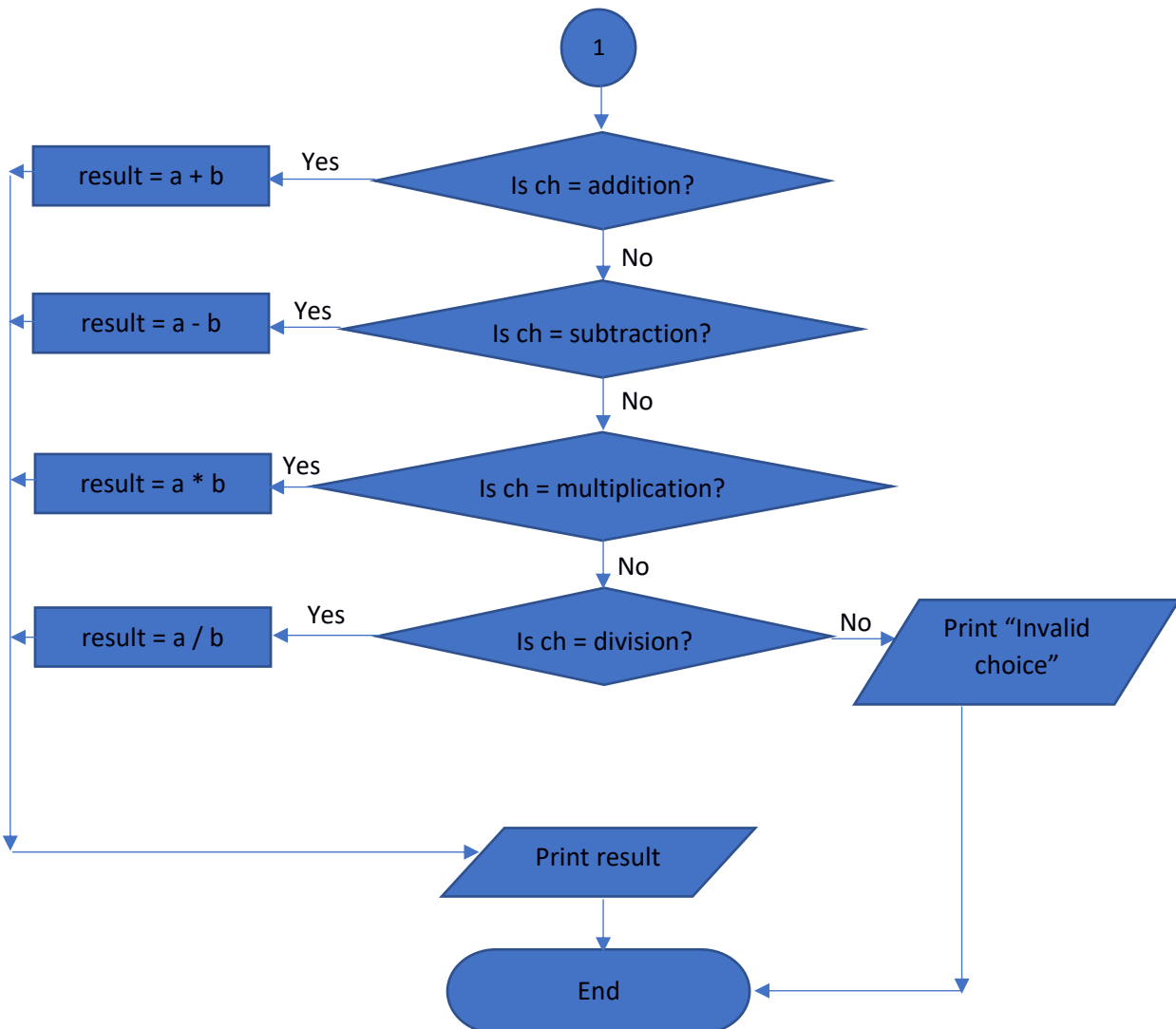
Step 6: If the choice is multiplication, calculate and print the product of the two numbers.

Step 7: If the choice is division, calculate and print the result (with float value) of the division.

Step 8: End

### **Flowchart**





## Program

```
# Python program to perform basic operations.  
  
# To take two numbers and choice of operator as input from the user  
a=float(input("Enter the first number: "))  
b=float(input("Enter the second number: "))
```

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Date: 28/12/2020  
S03018

Ex. No.: 3

---

```
choice=int(input("Enter your choice - 1 for +, 2 for -, 3 for * and 4
for /: "))
if (choice==1):
    sum=a+b
    print("Sum: ",sum)
elif (choice==2):
    diff=a-b
    print("Difference: ",diff)
elif (choice==3):
    prod=a*b
    print("Product: ",prod)
elif (choice==4):
    res=a/b
    print("Result: ",res)
else:
    print("Invalid choice!")
```

## Output

Input:

42, 35, 1  
64, 22, 2  
23, 3, 3  
48, 8, 4

Output:

```
Enter the first number: 42
Enter the second number: 35
Enter your choice - 1 for +, 2 for -, 3 for * and 4 for
/: 1
Sum: 77.0

Enter the first number: 64
```

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```
Enter the second number: 22
Enter your choice - 1 for +, 2 for -, 3 for * and 4 for
/: 2
Difference: 42.0
```

```
Enter the first number: 23
Enter the second number: 3
Enter your choice - 1 for +, 2 for -, 3 for * and 4 for
/: 3
Product: 69.0
```

```
Enter the first number: 48
Enter the second number: 8
Enter your choice - 1 for +, 2 for -, 3 for * and 4 for
/: 4
Result: 6.0
```

## Results / Inferences

Program for performing basic operations is written and executed.



## **Percentage and Grade**

### **Aim**

To calculate the percentage and display the grade based on the marks.

### **Algorithm**

Input: Marks of five different subjects

Output: Percentage and result

Step 1: Start

Step 2: Read the marks of 5 different subjects.

Step 3: Calculate the sum of the marks and divide by 5 to get their average. Store it as the percentage.

Step 4: Print the percentage.

Step 4: If the percentage is less than 60, print the result as fail.

Step 5: If the percentage is greater than 60 but less than 70, print the result as pass.

Step 6: If the percentage is greater than 70 but less than 80, print the result as second class.

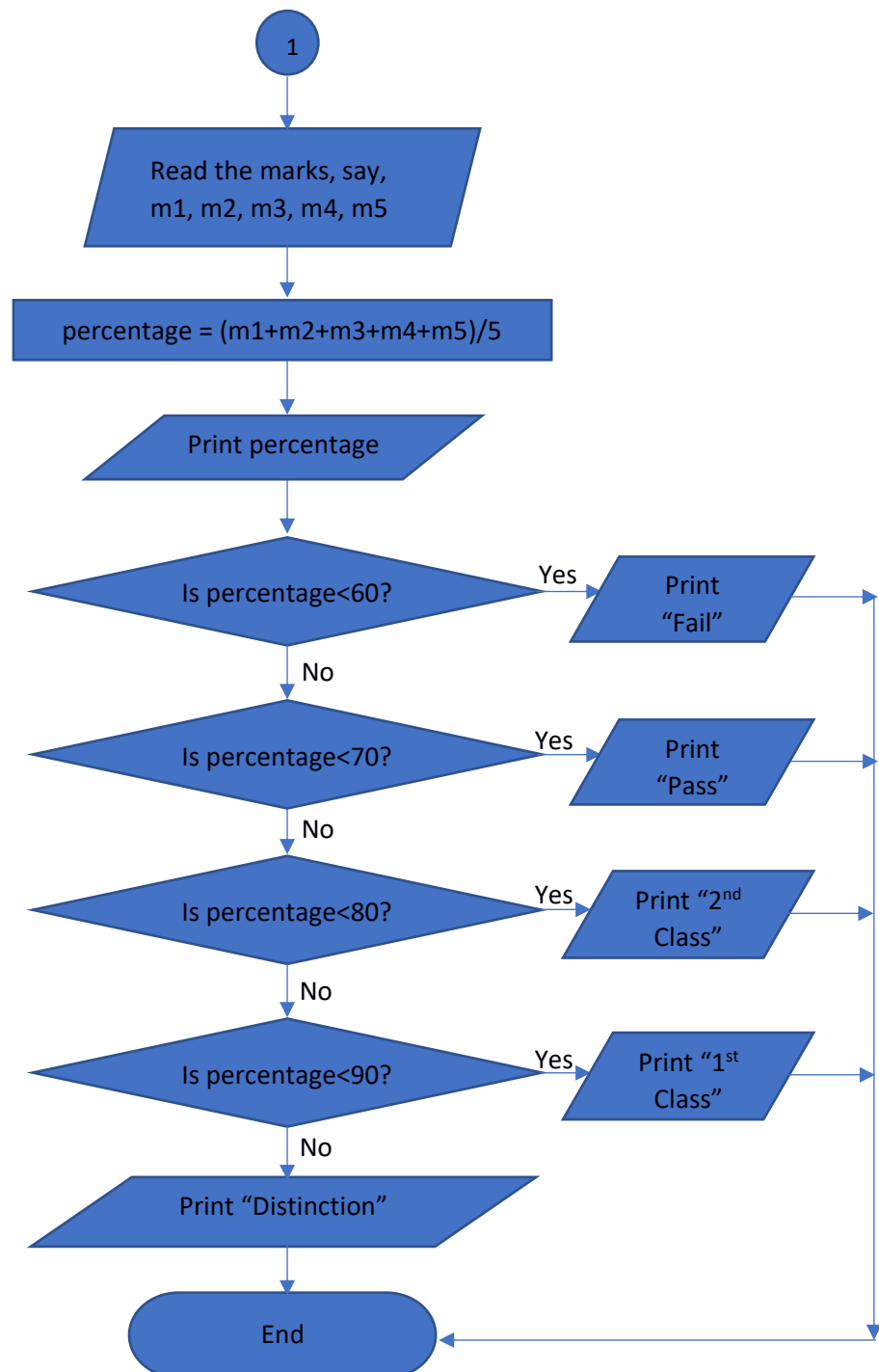
Step 7: If the percentage is greater than 80 but less than 90, print the result as first class.

Step 8: If the percentage is greater than 90, print the result as distinction.

Step 9: End

### **Flowchart**





## Program

```
# Python program to calculate the percentage and display the grade.

# To take five different marks as input from the user
print("Enter marks of 5 different subjects.")
m1=int(input("Mathematics: "))
m2=int(input("English: "))
m3=int(input("Physics: "))
m4=int(input("Chemistry: "))
m5=int(input("Computer Science: "))
total=m1+m2+m3+m4+m5
per=total/5
# To print the percentage
print("Achieved ",per,"%")
# To print the grade
if (per<60):
    print("Fail")
elif (per>=60 and per<70):
    print("Pass")
elif (per>=70 and per<80):
    print("Second Class")
elif (per>=80 and per<90):
    print("First Class")
else:
    print("Distinction")
```

## Output

Input:

99, 97, 97, 95, 98  
62, 87, 45, 76, 65

Output:

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Date: 28/12/2020  
S03018

Ex. No.: 3

---

**Enter marks of 5 different subjects.**

**Mathematics: 99**

**English: 97**

**Physics: 97**

**Chemistry: 95**

**Computer Science: 98**

**Achieved 97.2 %**

**Distinction**

**Enter marks of 5 different subjects.**

**Mathematics: 62**

**English: 87**

**Physics: 45**

**Chemistry: 76**

**Computer Science: 65**

**Achieved 67.0 %**

**Pass**

## **Results / Inferences**

Program for calculating the percentage and grade is written and executed.

## **Suitable sport**

### **Aim**

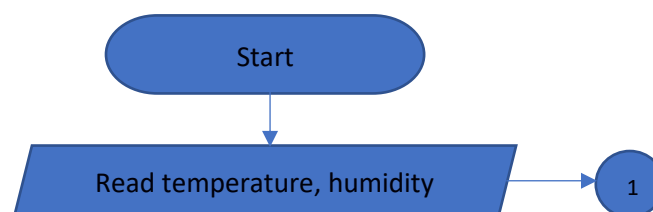
To find and display a suitable sport based on the weather conditions.

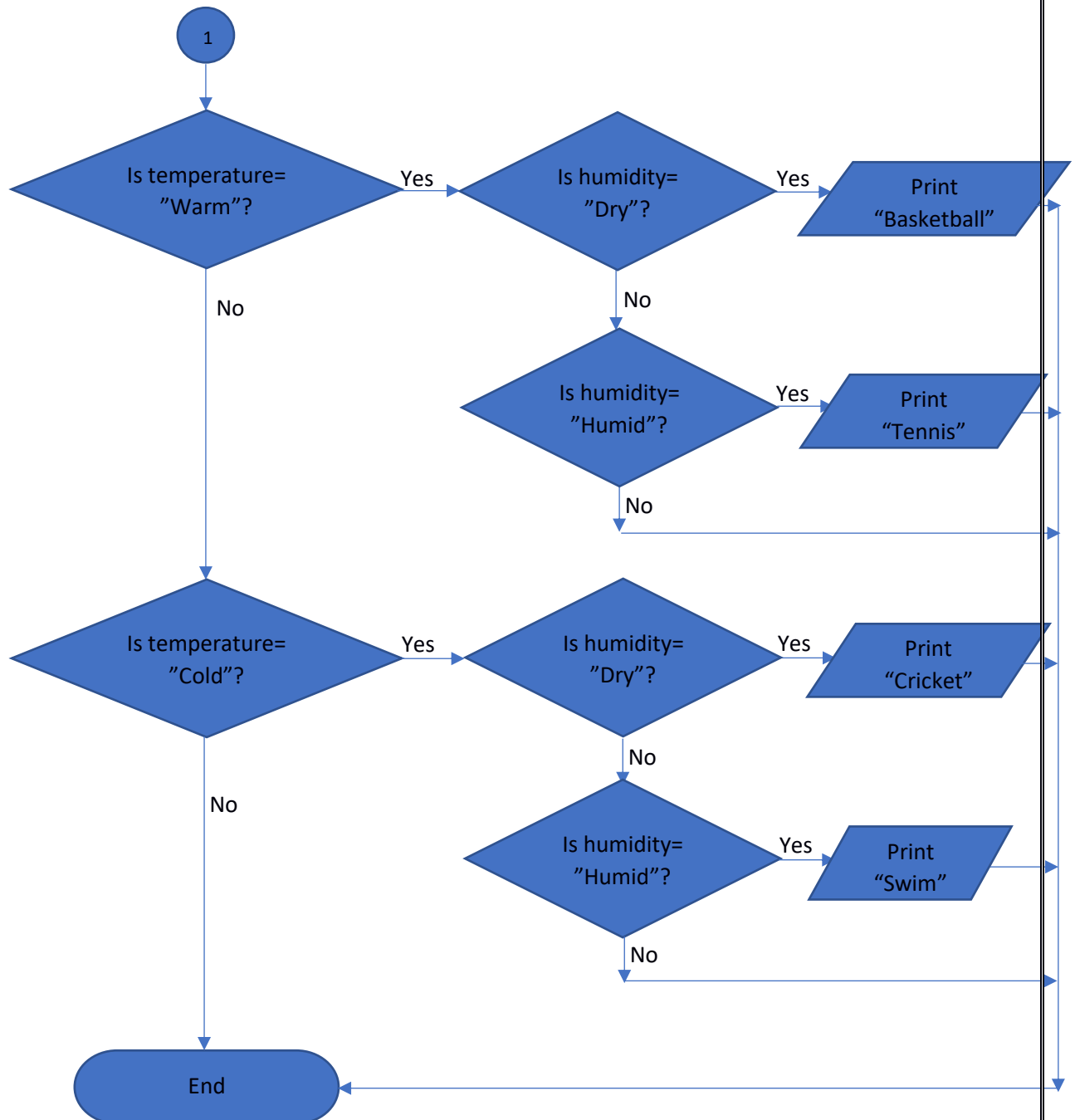
### **Algorithm**

Input: Weather conditions, i.e., temperature and humidity  
Output: Name of the suitable sport

Step 1: Start  
Step 2: Read the temperature  
Step 3: Read the humidity  
Step 4: Check if the temperature is warm.  
Step 5: If yes, check if the humidity is dry.  
Step 6: If yes, print "Play Basketball".  
Step 7: If no, print "Play Tennis".  
Step 8: If the temperature is not warm, check if the temperature is cold.  
Step 9: If yes, check if the humidity is dry.  
Step 10: If yes, print "Play Cricket".  
Step 11: If no, print "Swim".  
Step 12: End

### **Flowchart**





## Program

```
# Python program to find a suitable sport based on temperature and
humidity.

# To take temperature and humidity as input from the user
temp=input("Temperature: ")
hum=input("Humidity: ")
if (temp=='Warm'):
    if (hum=='Dry'):
        print("Play Basketball")
    elif (hum=='Humid'):
        print("Play Tennis")
elif (temp=='Cold'):
    if (hum=='Dry'):
        print("Play Cricket")
    elif (hum=='Humid'):
        print("Swim")
else:
    print("Invalid entry!")
```

## Output

Input:

Warm, Dry; Warm, Humid; Cold, Dry; Cold, Humid

Output:

Temperature: Warm  
Humidity: Dry  
Play Basketball

Temperature: Warm  
Humidity: Humid  
Play Tennis

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**AY: 2020-2021**

Krithika Swaminathan  
Date: 28/12/2020  
S03018

Ex. No.: 3

---

**Temperature: Cold**  
**Humidity: Dry**  
**Play Cricket**

**Temperature: Cold**  
**Humidity: Humid**  
**Swim**

## **Results / Inferences**

Program for finding a suitable sport based on weather conditions is written and executed.