PROBLEM 1

Temperature of a city in Farenheit degrees is input through the keyboard. Write a program to convert this temperature into Centigrade degrees.

ALGORITHM

1. Start
2. Declare float variables Farenheit and celsius
3. Take farenheit as input
4. Calculate Celsius from the formula celsius = ((farenheit - 32) / 1.8)
5. Display the farenheit and celsius values
6. Stop

PSEUDOCODE

```
DECLARE FLOAT farenheit, celsius
INPUT farenheit
ASSIGN celsius to ((farenheit - 32) / 1.8);
DISPLAY "Value in farenheit is: "
DISPLAY farenheit
DISPLAY "Value in celsius is: "
DISPLAY celsius
```

FLOWCHART

```
flowchart TD
A([Start]) --> B[[Declare fahrenheit and celsius]]
B --> C[/Take fahrenheit as input/]
C --> D[[Calculate celsius using the formula]]
D --> E[/Display celsius/]
E --> F([End])
```

PROBLEM 2

The length and breadth of a rectangle and radius of a circle are input through the keyboard. Write a program to calculate the area and perimeter of the rectangle, and the area and circumference of the circle.

ALGORITHM:

1. Start
2. Declare float variables length, breadth,radius, area_cir,area_rec,per_cir,per_rec

3. Take length, breadth and radius as input
4. Calculate the area of the rectangle using the formula area_rec = length*breadth;
5. Calculate the perimeter of the rectangle using the formula per_rec = 2*(length+breadth);
6. Calculate the area of the circle using the formula area_cir = 3.14*radius^2;
7. Calculate the perimeter of the circle using the formula per_cir = 2* 3.14 *radius;
8. Display the input and output variables
9. Stop

PSEUDOCODE:

```
DECLARE FLOAT length, breadth,radius, area_cir,area_rec,per_cir,per_rec
INPUT length,breadth,radius
ASSIGN area_rec to length*breadth
ASSIGN per_rec to 2*(length+breadth)
ASSIGN area_cir to 3.14*radius^2
ASSIGN per_cir to 2*3.14*radius
DISPLAY "The length of the rectangle:"
DISPLAY length
DISPLAY "The breadth of the rectangle:"
DISPLAY breadth
DISPLAY "The radius of the circle:"
DISPLAY radius
DISPLAY "The area of the rectangle:"
DISPLAY area_rec
DISPLAY "The perimeter of the rectangle:"
DISPLAY per_rec
DISPLAY "The area of the circle:"
DISPLAY area_cir
DISPLAY "The perimeter of the circle:"
DISPLAY per_cir
```

FLOWCHART:

```
flowchart TD
A([Start]) --> B[[Declare the variables length, breadth,radius, area_cir,area_rec,per_cir,pe
B --> C[/Take length, breadth and radius as input/]
C --> D[[Calculate area of the rectangle]]
D --> E[[Calculate perimeter of the rectangle]]
E --> F[[Calculate area of the circle]]
F --> G[[Calculate perimeter of the circle]]
G --> H[/Display input and output variables/]
```

```
H --> I([Stop])
```

PROBLEM 3

Paper of size A0 has dimensions 1189 cm x 841 mm. Each subsequent size A(n) is defined as A(n-1) cut in half, parallel to its shorter sides. Thus, a paper of size A1 would have dimensions 841 mm x 594 mm. Write a program to calculate and print the paper sizes A1 to A8.

ALGORITHM:

1. Start
2. Declare float variables h and w.
3. Assign h to 1189 and w to 841.
4. Display "size of A0: h x w"
5. Calculate the size of A1 as: w = 2^(-0.25 - 0.5 * i) * 1000,h = 2^(0.25 - 0.5 * i) * 1000, taking i as 1.
6. Repeat Step 5 for i = 2 to i= 8
7. Display the sizes of A1 to A8.
8. Stop

PSEUDOCODE:

```
DECLARE FLOAT h,w
ASSIGN h to 1189
ASSIGN w to 841
DECLARE INTEGER i
ASSIGN i to 0
DISPLAY "Size of A0: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 1) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 1) * 1000
DISPLAY "Size of A1: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 2) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 2) * 1000
DISPLAY "Size of A2: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 3) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 3) * 1000
DISPLAY "Size of A3: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 4) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 4) * 1000
DISPLAY "Size of A4: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 5) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 5) * 1000
DISPLAY "Size of A5: hxw"
```

```
ASSIGN w to 2^(-0.25 - 0.5 * 6) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 6) * 1000
DISPLAY "Size of A6: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 7) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 7) * 1000
DISPLAY "Size of A7: hxw"
ASSIGN w to 2^(-0.25 - 0.5 * 8) * 1000
ASSIGN h to 2^(0.25 - 0.5 * 8) * 1000
DISPLAY "Size of A8: hxw"
```

FLOWCHART

```
flowchart TD
A([Start]) --> B[[Declare h and w]]
B --> C[[Assign h to 1189]]
C --> D[[Assign w to 841]]
D --> E[[Calculate w and h using i = 1 and display the results]]
E --> F[[Calculate w and h using i = 2 and display the results]]
F --> G[[Calculate w and h using i = 3 and display the results]]
G --> H[[Calculate w and h using i = 4 and display the results]]
H --> I[[Calculate w and h using i = 5 and display the results]]
I --> J[[Calculate w and h using i = 6 and display the results]]
J --> K[[Calculate w and h using i = 7 and display the results]]
K --> L[[Calculate w and h using i = 8 and display the results]]
L --> M([Stop])
```