1. *Write a Python script that asks the user to enter a length in centimetres. If the user enters a negative length, the program should tell the user that the entry is invalid. Otherwise, the program should convert the length to inches and print out the result. There are 2.54 centimetres in an inch.*

2. A store charges ₹ 120 per item if you buy less than 10 items. If you buy between 10 and 99 items, the cost is ₹ 100 per item. If you buy 100 or more items, the cost is ₹ 70 per item. Write a program that asks the user how many items they are buying and prints the total cost.

(c)
```
for i in range(4) :
    for j in range(5):
        if i + 1 == j or j + i == 4 :
            print "+",
        else :
            print "o",
    print
```

13. Predict the output of the following code fragments :

(a)
```
count = 0

while count < 10:
    print "Hello"
    count += 1
```

(b)
```
x = 10
y = 0

while x > y:
    print x, y
    x = x - 1
    y = y + 1
```

(c)
```
keepgoing = True
x = 100

while keepgoing :
    print x
    x = x - 10
    if x < 50 :
        keepgoing = False
```

(d)
```
x = 45

while x < 50 :
    print x
```

(e)
```
for x in [1, 2, 3, 4, 5]:
    print x
```

(f)
```
for x in range(5):
    print x
```

(g)
```
for p in range(1, 10):
    print p
```

(h)
```
for q in range(100, 50, -10):
    print q
```

(i)
```
for z in range(-500, 500, 100):
    print z
```

(j)
```
for y in range(500, 100, 100):
    print " * ", y
```

(k)
```
x = 10
y = 5

for i in range(x - y * 2):
    print " % ", i
```

(l)
```
for x in [1, 2, 3]:
    for y in [4, 5, 6]:
        print x, y
```

(m)
```
for x in range(3):
    for y in range(4):
        print  x, y, x + y
```

(n)
```
c = 0
for x in range(10):
    for y in range(5):
        c += 1
print c
```

14. What is the output of the following code ?

```
for i in range(4):
    for j in range(5):
        if i + 1 == j or j + i == 4:
            print "+",
        else:
            print "o",
    print
```

15. In the nested for loop code above, how many times is the condition of the if clause evaluated ?

16. Write a Python script to input temperature. Then ask them what units, Celsius or Fahrenheit, the temperature is in. Your program should convert the temperature to the other unit. The conversions are F = 9/5C + 32 and C = 5/9 (F 32).

Ask the user to enter a temperature in Celsius. The program should print a message based on the temperature :

- If the temperature is less than – 273.15, print that the temperature is invalid because it is below absolute zero.
- If it is exactly – 273.15, print that the temperature is absolute 0.
- If the temperature is between – 273.15 and 0, print that the temperature is below freezing.
- If it is 0, print that the temperature is at the freezing point.
- If it is between 0 and 100, print that the temperature is in the normal range.
- If it is 100, print that the temperature is at the boiling point.
- If it is above 100, print that the temperature is above the boiling point.

1. What is the common structure of Python compound statements ?
2. What is the importance of the three programming constructs ?
3. Rewrite the following code fragment that saves on the number of comparisons :

```
if (a == 0) :
    print "Zero"
if (a == 1) :
    print "One"
if (a == 2) :
    print "Two"
if (a == 3) :
    print "Three"
```

4. Under what conditions will this code fragment print "water" ?

```
if temp < 32 :
    print "ice"
elif temp < 212:
    print "water"
else :
    print "steam"
```

5. What is the output produced by the following code ?

```
x = 1
    if x > 3 :
        if x > 4 :
            print "A",
```

```
    else :
        print "B",
elif x < 2:
    if (x != 0):
        print "C",
print "D"
```

6. What is the error in following code ? Correct the code :

```
weather = 'raining'
if weather = 'sunny' :
    print "wear sunblock"
    elif weather = 'snow ' :
    print "going skiing"
else :
    print weather
```

7. What is the output of the following lines of code ?

```
if int( 'zero ') == 0 :
    print "zero"
elif str(0) == 'zero' :
    print 0
elif str(0) == '0 ' :
    print str(0)
else:
    print "none of the above"
```

8. Find the errors in the code given below and correct the code :

```
if n == 0
    print "zero"
elif : n == 1
    print "one"
elif
n == 2:
    print "two"
else n == 3:
    print "three"
```

9. What is following code doing ? What would it print for input as 3 ?

```
n = input( "Enter an integer:" )
if n < 1 :
    print "invalid value"
else :
    for i in range(1, n + 1):
        print i * i
```

10. How are following two code fragments different from one another ? Also, predict the output of the following code fragments :

(*a*)

```
n = input( "Enter an integer:" )
if n > 0 :
    for a in range(1, n + n ) :
        print a / (n/2)
    else :
        print "Now quiting"
```

(*b*)

```
n = input( "Enter an integer:" )
if n > 0 :
    for a in range(1, n + n ) :
        print a / (n/2)
    else :
        print "Now quiting"
```

11. Rewrite the following code fragments using for loop :

(*a*)

```
i = 100
while (i > 0) :
    print i
    i -= 3
```

(*b*)

```
while num > 0 :
    print num % 10
    num = num/10
```

(*c*)

```
while num > 0 :
    count += 1
    sum += num
    num -= 2

    if count == 10 :
        print sum/float(count)
        break
```

12. Rewrite following code fragments using while loops :

(*a*)

```
min = 0
max = num
if num < 0 :
   min = num
   max = 0

# compute sum of integers from min to max
for i in range(min, max + 1):
   sum += i
```

(*b*)

```
for i in range(1, 16) :
    if i % 3 == 0 :
        print i
```

(c)
```
for i in range(4) :
    for j in range(5):
        if i + 1 == j or j + i == 4 :
            print "+",
        else :
            print "o",
    print
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for x in [1, 2, 3]:
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    for y in range(4):
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```
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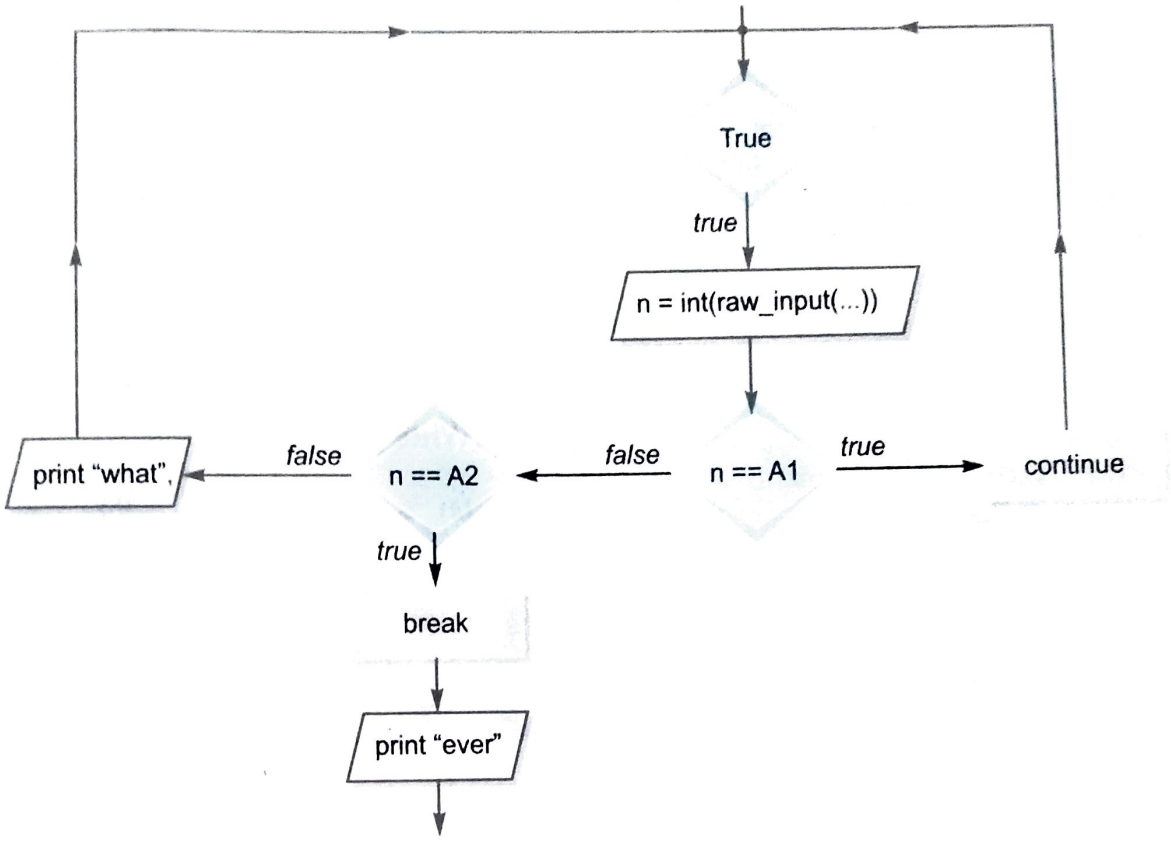
- If it is 100, print that the temperature is at the boiling point.
- If it is above 100, print that the temperature is above the boiling point.

17. Which of the following Python programs implement the control flow graph shown ?



(*a*)

```
while True :
    n = int(raw_input("Enter an int:"))
    if n == A1 :
        continue
    elif n == A2 :
        break
    else :
        print "what"
else :
    print "ever"
```

(*b*)

```
while True :
    n = int(raw_input("Enter an int: "))
    if n == A1 :
        continue
    elif n == A2 :
        break
    else :
        print "what"
print "ever"
```

(*c*)

```
while True :
    n = int(raw_input("Enter an int: "))
    if n == A1 :
        continue
    elif n == A2 :
        break
print "what"
print "ever"
```