Question- Answers

High Achievers

Python Control Statements

Q.1 Algorithm: An algorithm can be written as a list of steps or instructions. By using these instructions a computer program can create and execute to carry out desired output. The algorithm should be written in any human understandable language.
Example:
Write algorithm to access / login email address for web based application.
Step 1: Start
Step 2: Create a variable to receive the user's email address
Step 3: Clear the variable in case it's not empty
Step 4: Ask the user for an email address
Step 5: Store the response in the variable
Step 6: Check the record response to see if it is a valid email address
Step 7: Not Valid? Go back to step-3
Step 8: End

Q.2 Flowchart: Flowchart is a graphical representation of an algorithm or it is a sequence of instructions represent in graphical symbols for problem solving. Flowchart helps the programmers as problem solving tool. It show the flow of program execution in diagrammatic form. Some Symbols used in flowchart are:

Start /Stop		Decision Box	
Input/output/print		Flow Lines	
Process /computation		connector	

Example: Represent a flowchart to access / login email address for web based application.
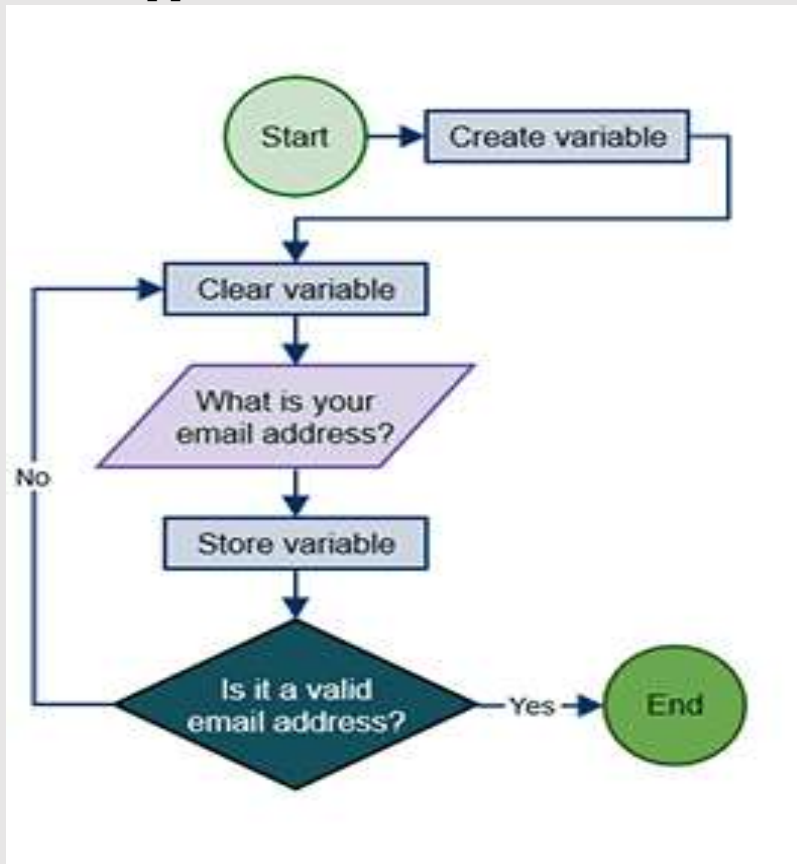
Q.3 How the Sequencing, Selection and Iteration are important in programming?

1. Sequencing: This means that the Python Interpreter will run code in order, one line at a time from the top to the bottom of program. It will start at line 1, then execute line 2 then line 3 and so on till it reaches the last line of program.

2. Selection: Sometimes some lines of code to be run depending on condition, otherwise ignore these lines and jump over them. This is achieved using selection statements. e.g. If a condition meet then lines 14, 15, 16 should be executed otherwise the jumps to line 17 Without even looking at line 14, 15 and 16.

3. Iteration: Sometimes we have to execute same lines of code several times. This is done by using a loop. There are two types of loops: For loop, while loop. Loop facilitate user not to copy the same lines of ode many times.

Q.4 what is Pseudo code?

Pseudo‖ means imitation of false and —code‖ refers to the instruction written in a programming language. Pseudo code is programming analysis tool that is used for planning program logic.

Q.5 Write the Characteristics of Pseudocode.

• Named variables represent data and identifiers denote higher level Functions.
• Composed of a sequence of statements or steps.
• Statements are often numbered sequentially.
• Operational (Imperative) statements include assignment, input, and output.
• Control structures provide iterative and conditional execution.
• Indentations used for grouping blocks of statement

Q.6 Differentiate Algorithm and Pseudo code

S.No	Algorithm	Pseudo code
1	It is a well-defined procedure that allows a computer to solve a problem	It is a simple way of writing programming code in English.
2	Algorithms can be described in various ways, from pure mathematical formulas to complex graphs.	Pseudo code describes how you would implement an algorithm without getting into syntactical details.

Q.7 What is the difference between algorithm and flowchart

S.No	Algorithm	Flow Chart
1	Step by Step formation	Pictorial formation
2	Mostly run to complete or manage a program implementation.	Can be used in general terms to solve any problem related to an individual or a group.
3	More detailed but difficult to understand	Less detailed but easy to understand by everyone.

Q.8 A school has following rules for grading system:
a. Below 25 - F
b. 25 to 45 - E
c. 45 to 50 - D
d. 50 to 60 - C
e. 60 to 80 - B
f. Above 80 - A
Ask user to enter marks and print the corresponding grade.
Answer:

```
print ("Enter marks")
marks = int(input())
if marks<25:
   print ("F")
elif marks>=25 and marks<45:
   print ("E")
elif marks>=45 and marks<50:
   print ("D")
elif marks>=50 and marks<60:
   print ("C")
elif marks>=60 and marks<80:
   print ("B")
else:
   print ("A")
```

9. Write program to find factorial of n numbers.
Answer.

```
print("Enter number upto which want to find factorials: ")
n=int(input())
while(n>=1):
    f=1
    for i in range(1,n+1):
        f=f*i
    print("Factorial of ",n," = ",f)
    n-=1
```

Q.10
A student will not be allowed to sit in exam if his/her attendance is less than 75%.
Take following input from user
Number of classes held, Number of classes attended And print percentage of class attended
Is student is allowed to sit in exam or not.
Answer:
```python
#Is student is allowed to sit in exam or not.
print ("Number of classes held")
noh = int(input())
print ("Number of classes attended")
noa = int(input())
atten = (noa/float(noh))*100
print ("Attendence is",atten)
if atten >= 75:
  print ("You are allowed to sit in exam")
else:
  print ("Sorry, you are not allowed. Attend more classes from next time.")
```

11. Write program to find prime number between 1 and 50.
Answe.
```python
for n in range(1,51):
   i=2
   prime=True
   while(i<=n//2):
      if(n%i==0):
         prime=False
         break
      i+=1
   if(prime==True):
      print(n)
```

12. Write program to find Fibonacci series upto given term.
Answer.

```
term=int(input("Numbber of terms for fibonicci series: "))
a=0
b=1
print(a," ",b,end="  ")
term-=2
while(term>=1):
    a,b=b,a+b
    print(b,end="  ")
    term-=1
```

13. Write python code to draw the following patterns.

```1 0 1 101 0101 10101``` 1 0 1 1 0 1 0 1 0 1 1 0 1 0 1	```for i in range(1,6): if(i%2==0): for j in range(2,i+2): print(j%2,end=" ") else: for j in range(1,i+1): print(j%2,end=" ") print()```
``` 1 1 2 1 1 2 3 2 1 1 2 3 4 3 2 1 1 2 3 4 5 4 3 2 1```	```for i in range(1,6): for sp in range(1,6-i): print(end=" ") for j in range(1,i+1): print(j,end=" ") for k in range(j-1,0,-1): print(k,end=" ") print()```

14. Write program to enter any integer number and find followings.
      (i) Sum of digits in number
      (ii) Count of digits in number
      (iii) Reverse of number
      (iv) Find number is palindrome or not
      (v) Find number is Armstrong or not
(Armstrong: sum of the cubes of each digit, should equal to given number)
Answer.

```
n=int(input("Enter integer number: "))
count=sum=rev=arm=0
dup=n
while(n>0):
    count+=1
    sum+=n%10
    rev=rev*10+n%10
    arm=arm+(n%10)**3
    n=n//10
print("Number is: ",dup)
print("Reverse of Number is: ",rev)
print("Sum of Digits in Number is: ",sum)
print("Total diits in Number are: ",count)
if(rev==dup):
    print(dup," is palindrome type number")
else:
    print(dup," is not palindrome type number")
if(arm==dup):
    print(dup," is Armstrong Number")
else:
    print(dup," is not is Armstrong Number")
```

15. Write program to enter string and total number of vowels (a,e,io,u)
Answer.

```
s=input("Enter String: ")
count=0
for ch in s:
    ch=ch.lower()
    if(ch in['a','e','i','o','u']):
        count+=1
        print(ch)
    print("total Vowels: ",count)
```

16. What is entry controlled loop?
Answer.
 In looping concept, if the test condition take place before execution of the block then it is called entry controlled loop.
While(test condition) is an entry controlled loop.

17. What are endless loop? Why do such loops occur?
Answer.
 The loop that executes for infinite time and has no normal termination of loop is the endless loop. These endless loop occurs due to following reasons.
• 	Use of wrong test-condition
• 	Use of increment in place of decrement in update or vice-versa.
• 	Missing of update statement

18. Write Disadvantages of jumping statement.
Answer.
• 	Un-conditional statement.
• 	Some of statements in loop skipped over to execute.
• 	Only used in loop construct.
• 	While using "continue statement", loop updation statement should take place before continue statement otherwise it creates endless iteration.
• 	Break statement, exit only from the loop in which it is used. So, to exit from nested loops, multiple breaks requires at appropriate location.

19. Re-write the following code by using for loop

Using while loop	Using for loop

i=100
while(i>0):
   print(i)
   i-=3
	for i in range(100,0,-3):
	      print(i)

num=50
count=sum=0
while(num>0):
   count+=1
   sum+=num
   num-=2
   if (count==10):
      print(sum/float(count))
      break
	count=sum=0
	for num in range(50,0,-2):
	   count+=1
	   sum+=num
	   if(count==10):
	      print(sum/float(count))
	      break

20. How the format() useful in formatted output in string.
Answer:

```
age=30
nm="Ranjeet Singh"
msg="Hello, I am {} and {} year old."
str=msg.format(nm,age)
print(str)
Output: Hello, I am Ranjeet Singh and 30 year old."

msg="Hello, I am {1} and {0} year old."
msg.format(age,nm)
# Here index of age is 0 and index of nm is 1.

Output: Hello, I am Ranjeet Singh and 30 year old."
```