MDSC – 102 Assignment
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1.What is Variable in Python?
It can be a alphanumeric constant to define a value and store it.

2. How do you create a variable?
It is created by assigning a value to a alphanumeric
eg)a=3

3.How do you check the value within a variable?
By printing/typing the value in the command prompt we can display the value of the variable.

4. How do you create multiple variables in a single statement?
By using comma operator we can create and use multiple variables in a single statement.
eg)a,b,c=1

5. How do you create multiple variables with the same value?
Define the variable and use comma operator to create multiple variables with the same value
eg)x,y=10

6.How do you change the value of a variable?
Reassign the value of the variable using the = operator
eg)if a=10 to make it 12, reassign it using a=12

7. How do you reassign a variable by modifying the previous value?
By using operators.
If a=12
if we need to make it 14 we need to use operators like a=a+2 and make it 14.

8. What does the statement `counter += 4` do?
It increments the counter to 4

9. What are the rules for naming a variable?
Variable names are *case-sensitive*: a and A are different variables
Variable names can contain any letter, the underscore character (“_”) and any digit (0–9 but must not start with a digit
The built-in constant names `True`, `False` and `None` cannot be assigned as variable names.
There are total 35 reserved key words in Python, you can't use as variable name like elif and etc.

10.Are variable names case-sensitive? Do `a_variable`, `A_Variable`, and `A_VARIABLE` represent the same variable or different ones?
Yes

11. What is Syntax? Why is it important?
Syntax is the predefined method to solve a question and approach a problem in computer science. With proper syntax we can approach a problem in right direction else it will pop up an error

12. What happens if you execute a statement with invalid syntax?
It will pop up an error and cannot execute the statement

13. How do you check the data type of a variable?
By tusing the type function.
eg)a=10
type(a)#int

14. What are the built-in data types in Python?
Int,float,complex,bool,str,bytes,bytearray,range,list,tuple,set,frozenset,dict,None

15. What is a primitive data type?
Datatype that doesnt contain other datatype
16. What are the primitive data types available in Python?\
Numbers
17. What is a data structure or container data type?
List tuple sets dictionary

18.What are the container types available in Python?
List tuple sets dictionary

19. What kind of data does the Integer data type represent?
Numericals eg)22,-1,-5

20. What are the numerical limits of the integer data type?
Range is -infinty to infinty

21. What kind of data does the float data type represent?
It represents float type values
eg)f=1.234
type(f) #float

22. How does Python decide if a given number is a float or an integer?
If there's a decimal (.) in the number its a float else its an integer.
Usually we can find out using type function.

23. How can you create a variable which stores a whole number, e.g., 4 but has the float data type?
Define the variable and assign the value.
Eg) int a= 4

24. How do you create floats representing very large (e.g., 6.023 x 10^23) or very small numbers (0.000000123)?
Assign to a variable and represent float values by using decimal form.

25.What does the expression `23e-12` represent?
Float type data

26. Can floats be used to store numbers with unlimited precision?
Yes

27.What are the differences between integers and floats?
int data type to represent whole numbers float contains decimal point in the number.

28. How do you convert an integer to a float?
By typecasting eg)float(10) #10.0

29. How do you convert a float to an integer?
By typecasting eg)int(10.0) #10

30. What is the result obtained when you convert 1.99 to an integer?
1

31. What are the data types of the results of the division operators `/` and `//`?
/ ==>Division operator
// ==>Floor Division operator
a=10
b=2
print('a/b=',a/b)#5.0
print('a//b=',a//b)#5

32. What kind of data does the Boolean data type represent?
It represents true or false

33. Which types of Python operators return booleans as a result?
Bool operator

34. What happens if you try to use a boolean in arithmetic operation?
If output is 0 its false else it's true

35. How can any value in Python be covered to a boolean?
By typecasting

36. What are truthy and falsy values?
0 and 1 are truthy and falsy values

37. What are the values in Python that evaluate to False?
0

38. Give some examples of values that evaluate to True.
bool(10)
bool(10.5)

39. What kind of data does the None data type represent?
None means Nothing or No value associated.
Eg:def m1():
a=10
print(m1())#None

40. What is the purpose of None?
None means Nothing or No value associated.

41. What kind of data does the String data type represent?
To represent sequence of Immutable Characters

42. What are the different ways of creating strings in Python?
Using either single or double quotes
eg)s1='sairam'

s1="sairam"

43. What is the difference between strings creating using single quotes, i.e. `'` and `'` vs. those created using double quotes,
Both are same

44. How do you create multi-line strings in Python?
Using “””” triple double quotes

45.What is the newline character, `\n`?
It means thatshift to the the next immediate line

46.What are escaped characters? How are they useful?
It helps to format the code and for display
The following are various important escape characters in Python
\n==>New Line
\t===>Horizontal tab
\r ==>Carriage Return
\b===>Back space

47.How do you check the length of a string?
Using the len() function we can check the length of a string

48. How do you convert a string into a list of characters?
By using the list function

49. How do you access a specific character from a string?
By using the index

50. How do you access a range of characters from a string?
By setting the index range

51. How do you check if a specific character occurs in a string?
Use the “in” keyword

52. How do you check if a smaller string occurs within a bigger string?
Check wheter the words is a part of the main string

53. How do you join two or more strings?
By using the join operator

```
l=['hyderabad','singapore','london','dubai']
s=':'.join(l)
print(s)#hyderabad:singapore:london:dubai
```

54.What are "methods" in Python? How are they different from functions?
Methods are the operations that belong to a class.

55. What do the `.lower`, `.upper` and `.capitalize` methods on strings do?
They change the case of the alphabets to lowercase, uppercase or capitalize the word sentence or paragraph

56. How do you replace a specific part of a string with something else?

Slice the string and join the required word using the + operator

57. How do you split the string \"Sun,Mon,Tue,Wed,Thu,Fri,Sat\" into a list of days?
By using the split function

58. How do you remove whitespace from the beginning and end of a string?
We can use the following 3 methods
1. rstrip()===>To remove spaces at right hand side
2. lstrip()===>To remove spaces at left hand side
3. strip() ==>To remove spaces both sides

59. What is the string `.format` method used for? Can you give an example?
We can format the strings with variable values by using replacement operator {} and format() method.
name='surya'
salary=10000
age=48
print("{} 's salary is {} and his age is {}".format(name,salary,age))
surya 's salary is 10000 and his age is 48

60.What are the benefits of using the `.format` method instead of string concatenation?
It helps to display the values which are assigned directly to varibales.

61. How do you convert a value of another type to a string?
Typecasting

62. How do you check if two strings have the same value?
Comparing the strings using assignment operator

63.Where can you find the list of all the methods supported by strings?
dir(str)

64. What is a list in Python?
List is used to represent a group of individual objects as a single entity where insertion order preserved and duplicates are allowed.

65. How do you create a list?
Define it as list=[]

66. Can a Python list contain values of different data types?
Yes

67. Can a list contain another list as an element within it?
Yes its nested list

68. Can you create a list without any values?
Yes

69. How do you check the length of a list in Python?
By using the len function.

70. How do you retrieve a value from a list?

Printing the list we can retrieve a value from a list

71. What is the smallest and largest index you can use to access elements from a list containing five elements?
If we use 0 we can accesthe 1st element if we use -1 we can access the last largest index.

72. What happens if you try to access an index equal to or larger than the size of a list?
We get an error

73. What happens if you try to access a negative index within a list?
We can access the data.

74. How do you access a range of elements from a list?
By accessing the required index values and printing them
n=[1,2,3,4,5,6,7,8,9,10]
print(n[1:10])

75. How many elements does the list returned by the expression `a_list[2:5]` contain?
3 elements
76. What do the ranges `a_list[:2]` and `a_list[2:]` represent?
`a_list[:2]` It states from 0 to 2
 `a_list[2:]` it states from 2 to n

77. How do you change the item stored at a specific index within a list?
Access the index and change the value to our desire
eg)list[index] = new_value.

78. How do you insert a new item at the beginning, middle, or end of a list
define the postion and value
n=[1,2,3,4,5]
n.insert(1,888)
print(n)#[1, 888, 2, 3, 4, 5]

79. How do you remove an item from a list?
By using the remove function
n=[10,20,10,30]
n.remove(10)
print(n)#[20, 10, 30]

80. How do you remove the item at a given index from a list?
By using the pop function

81. How do you check if a list contains a value?
By printing the list

82. How do you combine two or most lists to create a larger list?
By using the extend function()
order1=[“Cabbage","aloo"]
order2=["RC","KF","FO"]
order1.extend(order2)
print(order1)//[“Cabbage","aloo","RC","KF","FO"]

83. How do you create a copy of a list?
By the process of cloning
x=[10,20,30,40]
y=x

84. Does the expression `a_new_list = a_list` create a copy of the list `a_list`?
Yes

85.Where can you find the list of all the methods supported by lists?
By using the dir(list)

86. What is a Tuple in Python?
Tuple is exactly same as List except that it is immutable.

87. How is a tuple different from a list?
List Objects are Mutable and we use [] brackets
Tuple Objeccts are Immutable we use () brackets

88. Can you add or remove elements in a tuple?
No

89. How do you create a tuple with just one element?
Just have a single element in a tuple
t=(10)
print(t)

90. How do you convert a tuple to a list and vice versa?
Typecasting

91. What are the `count` and `index` method of a Tuple used for?
Count is used to return number of occurrences of given element in the tuple.
Index returns first occurrence of the given element.

92. What is a dictionary in Python?
It represent a group of objects as key-value pairs.

93.How do you create a dictionary?
d={100:'sam’}
print(d[100]) #sam

94. What are keys and values?
d={100:'sam’}
100 is the key and sam is the value

95.how do you access the value associated with a specific key in a dictionary?
Using the key we can access
d={100:'sam’}
print(d[100]) #sam

96. What happens if you try to access the value for a key that doesn't exist in a dictionary?
We get a KeyError

97. What is the `.get` method of a dictionary used for?
It is used to retieve the values.

98. How do you change the value associated with a key in a dictionary?
By update function
```
d={100:"sam",200:"ravi",300:"shiva"}
 print(d)#{100:"sam",200:"ravi",300:"shiva"}
d[100]="sunny"
print(d)#{100: 'sunny', 200: 'ravi', 300: 'shiva'}
```

99. How do you add or remove a key-value pair in a dictionary?
By using delete function
```
d={100:"sam",200:"ravi",300:"shiva"}
print(d)#{100:"sam",200:"ravi",300:"shiva"}
print(d)
print(d)#del d[100]
{200:"ravi",300:"shiva"}
```

100. How do you access the keys, values, and key-value pairs within a dictionary?
```
d={100:"sam",200:"ravi",300:"shiva"}
```
d.keys to access the keys
d.values to acess the values
d.items to access both keys and values.