python-basics-assignment

October 10, 2024

##1)Explain key features of python that make it a popular choice for coding?

###ANS - Python is simple and used to learn which has a huge community, it contains a lot of useful libraries and packages which are used for data science and AI. It is a growing community. It has many important libraries useful for data manipulation, visualization, and machine Learning . Some of these include numpy, pandas , matplotlib, tensorflow.

##2)Describe the role of predefined keywords in python and provide examples of how they are used in a program

###ANS - predefined keywords are reserved words in python which play an important role in programming . every keyword has a particular purpose and functionality in python. ###Examples include ###input() to take input from the uses, ###print() to print output on terminal, ###While to create a loop, ###In (membership operator), ###Is (identity operator

##3)compare and contract mutable and immutable objects in python with examples

###ANS - mutable objects are objects which can be changed or modified according to the scenario examples are list and dictionary ###immutable objects are objects which cannot be changed or modified according to the scenario examples are string and tuple

[45]:
```
#list
li=[1,2,3,4,5]
print(li)
li[2]=34
li[4]=32
print(li)
```

```
[1, 2, 3, 4, 5]
[1, 2, 34, 4, 32]
```

[47]:
```
# dictionary
dic={'one':1,'two':2,"three":3}
print(dic)
dic["one"]=23
dic["two"]=34
print(dic)
```

```
{'one': 1, 'two': 2, 'three': 3}
{'one': 23, 'two': 34, 'three': 3}
```

[49]:
```
#string
a="Saabir"
print(a)
a[0]="e"
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[49], line 3
      1 #string
      2 a="Saabir"
----> 3 a[0]="e"

TypeError: 'str' object does not support item assignment
```

[51]:
```
#tuple
t=(1,2,3,4)
print(t)
t[0]=23
```

```
(1, 2, 3, 4)
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[51], line 4
      2 t=(1,2,3,4)
      3 print(t)
----> 4 t[0]=23

TypeError: 'tuple' object does not support item assignment
```

##4)Discuss different types of operators in python and provide examples of how they are used

###there are 7 different types of operators: ###they are ###assignment operators ###comparison operators ###arthematic operators ###membership operators ###identity operators ###logical operators ###bitwise operarors

[53]:
```
#assignment operators
#this is used to assign a value to a variable
name="saabir"
email="shaik.saabir2003@gmail.com"
print(name, email)
```

```
saabir shaik.saabir2003@gmail.com
```

[61]:
```
#comparison operators
# it is used to compare various various objects and return a boolean value(True␣
 ↪or False)
```

```
a1=1
a2=2
print(a1==a2)
print(a1<=a2)
```

```
False
True
```

[71]:
```
#arthematic operators
#it is used to perform mathematical operartions on varibles
de=1
df=2
de+=1
print(de)
de*=df
print(de)
de*=5
print(de)
```

```
2
4
20
```

[77]:
```
#membership operators
# it is used to check wheather a object is part of list or tuple, etc
# it is used to iterate over a list or string they are in and not in
lis=[1,2,3,4]
for i in lis:
    print(i,end=" ")
```

```
1 2 3 4
```

[81]:
```
#identity operators
# it is used to check or compare the location or references of the variable or␣
 ↪object
# is or not is keywords are used
s1=1
s2=2
print(s1 is s2)
s2=1
print(s1 is s2)
```

```
False
True
```

[94]:
```
#logical operators
# these are used to perform "and" or "or" operations on various statements or␣
 ↪conditions
```

```
# they are & and |
if ((1 == 1) and (2==2)):
    print("yes")
if ((1==1) or (2==1)):
    print("or operator is used")
```

```
yes
| operator is used
```

[102]:
```
#bitwise operators
#these are oprations that are performed at bitwise level or bit
# they are bitwise and &, bitwise or |, XOR ^ , left shift <<, right shift >>
b1=100
b2=34
print("bitwise and",b1&b2)
print("bitwise or",b1|b2)
print("left shift", b1 << 3)
```

```
bitwise and 32
bitwise or 102
left shift 800
```

##5) explain the concept of type casting in python with examples

###there are two types of type casting in python ###they are implict or explict type casting ###implict type casting is done automatically by python ###explict type casting is dome manually by developer

[114]:
```
#implict type casting
a=10
print(type(a),a)
#automatically type casts "int"
b=1.0
print(type(b),b)
#automatically type casts "float"
c=a+b
print(type(c),c)
#automatically type casts "float" after adding "int" and "float"
```

```
<class 'int'> 10
<class 'float'> 1.0
<class 'float'> 11.0
```

[116]:
```
#explict type casting
a=float(10)
print(type(a),a)
#manually type casts as "float"
b=int(1.0)
print(type(b),b)
```

```
#manually type casts as "int" even through it is "float"
c=a+b
print(type(c),c)
#automatically type casts "float" after adding
```

```
<class 'float'> 10.0
<class 'int'> 1
<class 'float'> 11.0
```

##6)how do conditional statements work in python ?Illustsate with examples

###conditional statements work in such a way that if the above if the condition is True then the below block of code is executed ###there are several way to combine and write conditional statements using ###if , else , elif , nested if- else

[122]:
```
arr=[1,2,3,4,5,6]
no=int(input("enter a positve number to search"))
if no in arr:
       print("number is found")
elif no < 0:
    print("negative numbers not allowed")
else:
       print("number not found")
```

```
enter a positve number to search -1
```

```
negative numbers not allowed
```

[149]:
```
arr1=["saabir",34,"student"]
n=int(input("enter index of the list positive number"))
if ((-n-1)<=(n)):
    if (arr1[n]):
        if type(arr1[n]) == int :
            print("The element is number")
        else:
            print("The element is not a number")
else:
    print("enter valid index")
```

```
enter index of the list positive number 1
```

```
The element is number
```

##7)desribe the different types loops in python an there use cases with example

###there are two different types of loops in python ###they are while loop and for loop ###we can use break and continue to control the flow of command

###while loop block of code is repeatedly executed until the given condition is satisfied ###for loop block of code is repeatedly executed until the given iteration of a condition

[155]:
```
#use cases and examples of while loop
#while loop is used when we dont know the number of times block of code much be␣
 ↪executed
#or a given condition is satisfied
# Example of a while loop
c = 0
while c < 3:
    print(c)
    c += 1
```

```
0
1
2
```

[157]:
```
#use cases and examples of for loop
#for loop is used when we know the number of times block of code much be␣
 ↪executed and iterate over a elements of lists
#or a given executing a condition specific no of times

# Example of a for loop iterating over a list
names=["saabir","ayesha","ram"]
for i in names:
    print(i)
```

```
saabir
ayesha
ram
```

[ ]:
```

```