Python

1.What is Python?

A. Python is a high-level ,interpreted and general purpose,dynamically typed programming language with simple syntax.It's easy to learn and write,it has huge community support and it is a open source.Python can be used for web development,data analysis,machine learning, automation.

2.Is python a interpreter language ? if yes, explain?

A. yes, python is a interpreted programming language. The interpreter executes the piece of code in line by line at run time.

3.what is difference between interpreter and compiler?

A. **Interpreter:** Interprets code line by line ,executing it directly .code is not compiled into machine code before execution. **Ex**:Python,Javascript.

Compiler: Compiles the entire program into machine code before execution.Interpreter don't require a compilation step,while compilers do.

Ex: c , c++ , Java

4.what is data? Data types in python?

A. 2 types of data types

1.Primitive data types (int,float,str,bool,None)

Ex: cinema="Varsham",

Actor="Prabhas",

Year =2004,

Ishit=True

2.Non-primitive data types (List, Dictionary,Tuple,Set)

Ex:
animal=["wild",Domestic",{"wild_a":["lion","tiger","bear"],"Domestic_a":["dog" ,"cat","cow"]}]

5.what is List? Give an example for that?

A. List:List is a collection of data which may be primitive or non-primitive or both primitive and non-primitive.List is Mutable,it's denoted by[],and the elements in the list is separated by (,).

Ex: flowers=["rose","tulip","jasmine"]

6.what is dict? Give an example for that?

A. Dict:A dictionary is an unordered collection of key-value pairs,where each key is unique and maps to a specific value.It is Mutable,it's denoted by {},the key-value pair is separated by (,).

Ex:person={"name":"john",

"age":25,

"city":"USA"}

7.what is tuple? Give an example for that?

A. Tuple: Tuple is an ordered,immutable collection of items that can be of any data type,including str,int,floats,bool.It is denoted by (),each element in the tuple is separated by(,).

Ex: fruits=("apple",50,"banana",40,None)

8.what is the difference between the Mutable and Immutable data types? Give a single example for each of them to demonstrate?

A.**Mutable** data types can be modified after creation.Changes can be made to the existing object without creating a new one.

Ex: my_list=[1,2,3]

```
Print (my_list)    #output:[1,2,3]
My_list [0]=4
Print(my_list)      #output: [4,2,3]
```

Immutable data types cannot be modified after creation.Any changes require creating a new object.

Ex: my_tuple(1,2,3)

Print(my_tuple) #output: (1,2,3)

My_tuple[0]=5

Print(my_tuple) #output:'tuple' object does not support item Assignment.

9.what is the difference between the tuple and list?

A.

Tuple	List
1.Tuple is immutable.	1.List is mutable.
2.Tuples maintain the order of elements.	2.List maintain the order of elements.
3.Tuples are defined using parenthesis().	3.Lists are defined using square brackets[].
4.Tuples are generally faster than lists due to their immutability. Ex: fruits=("apple",50,"banana",40,None)	4.Lists provide more methods for manipulation,such as append(),insert(), and remove(),pop(). Ex:flowers=["rose","tulip","jasmine"]

10.How can we mutate the list?

A.Lists in python can be modified in various ways,including

Indexing-accessing the element through its index.

Append("item")-adds the element at end of the list.

Insert(index,"item")-adds an element at a specified position in the list.

Pop()-removes the element at the end of the list.

Pop(index)-removes the element the specific position.

Remove(index)-removes the first occurrence of a specified element.

Sort()-sorts the list in place.

Reverse()-reverses the order of the list.

Extend()-adds multiple elements to the end of the list.

Ex: student=["rishi","banjara hills",18,560,True,False,None]

```
student[2]=20
student.append("2nd year")
student.insert(3,100)
student.pop(7)
print(student)
print(len(student))
```

output:['rishi', 'banjara hills', 20, 100, 560, True, False, '2nd year']

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11.what is the difference between the append and insert methods while mutating the list?

A. append("item") for adding to the end: when we want to add an element to the end of the list.

Insert(index,"item") for adding at a specific position: when we want to add an element at a specific position in the list.

Ex: student=["rishi","banjara hills",18,560,True,False,None]

```
student.append("2nd year")
student.insert(3,100)
print(student)
```

output:['rishi', 'banjara hills', 18, 100, 560, True, False, None, '2nd year']

12.How is the difference between the pop() and pop(index) in python?

A.pop() for removing the last element:when we want to remove the last element from the list ,pop() without argument.

Pop(index) for removing at a specific index : when we want to remove an element at a specific index,pop(index) with argument.

Ex: student=["rishi","banjara hills",18,560,True,False,None]

```
student.pop()
student.pop(3)
print(student)
```

output: ['rishi', 'banjara hills', 18, True, False]

13.How can you mutate the dictionary in python? Give an example?

A. Dictionaries in python can be modified ,including

Adding a new key-value pair.syntax:dict[key]=value

Updating an existing key value pair.syntax:dict[key]=new_value

Remove a key-value pair.we can remove a key value from a dict using the “del”

Ex:

```
person={"name":"himanth", "age":20,"city":"hyderabad"}
person["country"]="india"
person["country"]="america"
del person["age"]
print(person)
```

output: {'name': 'himanth', 'city': 'hyderabad', 'country': 'america'}

14. write nested dictionaries for electronics product?

A.

```
electronic_products={
                    "product1":{
                     "laptops":["dell","hp","asus"],
                     "ram":"60GB",
                     "price":50000,
                     "waranty": "2 years"
```

},

"product2":{"mobiles":["vivo","oneplus","oppo"],"price":30000,"ram":"64GB"}

}

electronic_products["products3"]={"kitchen":["electric cooker","kettle","toasters"],"price":20000}

print(electronic_products["product1"]["price"])

electronic_products["product1"]["price"]=15000

del electronic_products["product1"]["ram"]

print (electronic_products)

output:

50000

{'product1': {'laptops': ['dell', 'hp', 'asus'], 'price': 15000, 'waranty': '2 years'}, 'product2': {'mobiles': ['vivo', 'oneplus', 'oppo'], 'price': 30000, 'ram': '64GB'}, 'products3': {'kitchen': ['electric cooker', 'kettle', 'toasters'], 'price': 20000}}

15.write a list of dictionaries?

A. employee=[

{"personaldetails1":{"name":"john","id":"jd123"},

"professionaldetails":{"job title":"software engineer","department":"IT"}},

{"personaldetails2":{"name":"lalitha","id":"jd501"},

"professionaldetails":{"job title":"developer","department":"CSE"}}]

employee.append({"personaldetails3":{"name":"raj","id":"jd401"}})

employee.insert(3,{"professionaldetails":{"job title":" softwaredesigner","department" :"IT"}})

return_value=employee.pop(1)

print(employee[0]["professionaldetails"])

print(employee)

```
print(len(employee))
print(return_value)
```

output:

{'job title': 'software engineer', 'department': 'IT'}

[{'personaldetails1': {'name': 'john', 'id': 'jd123'}, 'professionaldetails': {'job title': 'software engineer', 'department': 'IT'}}, {'personaldetails3': {'name': 'raj', 'id': 'jd401'}}, {'professionaldetails': {'job title': ' softwaredesigner', 'department': 'IT'}}]

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{'personaldetails2': {'name': 'lalitha', 'id': 'jd501'}, 'professionaldetails': {'job title': 'developer', 'department': 'CSE'}}.