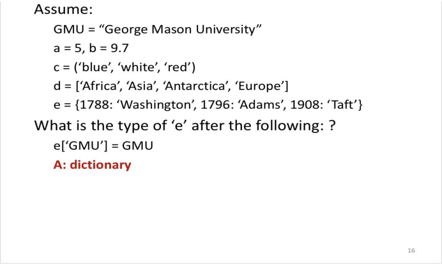


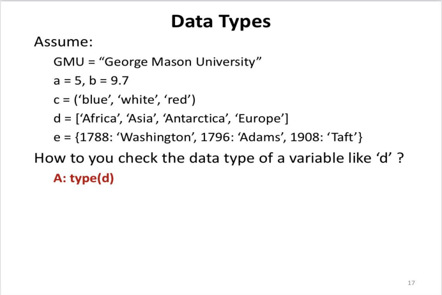
Assume:

GMU = “George Mason University”
a = 5, b = 9.7
c = (‘blue’, ‘white’, ‘red’)
d = [‘Africa’, ‘Asia’, ‘Antarctica’, ‘Europe’]
e = {1788: ‘Washington’, 1796: ‘Adams’, 1908: ‘Taft’}

What is the type of ‘e’ after the following: ?

e[‘GMU’] = GMU

A: dictionary



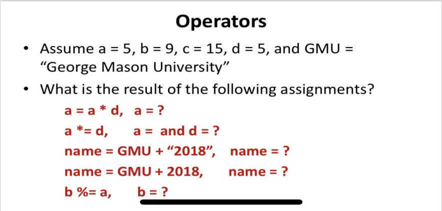
Data Types

Assume:

GMU = “George Mason University”
a = 5, b = 9.7
c = (‘blue’, ‘white’, ‘red’)
d = [‘Africa’, ‘Asia’, ‘Antarctica’, ‘Europe’]
e = {1788: ‘Washington’, 1796: ‘Adams’, 1908: ‘Taft’}

How to you check the data type of a variable like ‘d’ ?

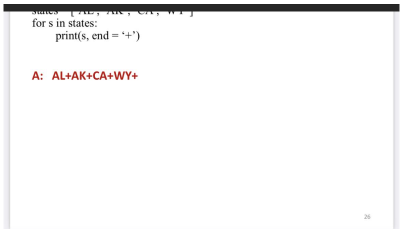
A: type(d)



Operators

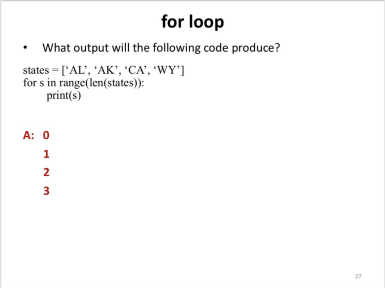
- Assume a = 5, b = 9, c = 15, d = 5, and GMU = “George Mason University”
- What is the result of the following assignments?

a = a * d, a = ?
a *= d, a = and d = ?
name = GMU + “2018”, name = ?
name = GMU + 2018, name = ?
b %= a, b = ?



```
states = [‘AL’, ‘AK’, ‘CA’, ‘WY’]
for s in states:
    print(s, end = ‘+’)
```

A: AL+AK+CA+WY+

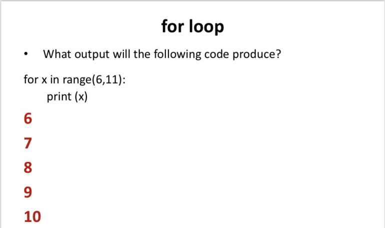


for loop

- What output will the following code produce?

```
states = [‘AL’, ‘AK’, ‘CA’, ‘WY’]
for s in range(len(states)):
    print(s)
```

A: 0
1
2
3

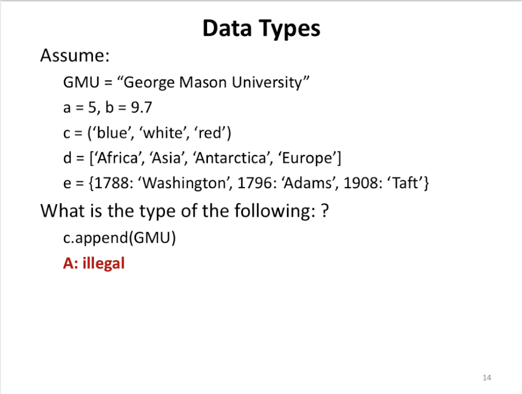


for loop

- What output will the following code produce?

```
for x in range(6,11):
    print (x)
```

```
6
7
8
9
10
```



Data Types

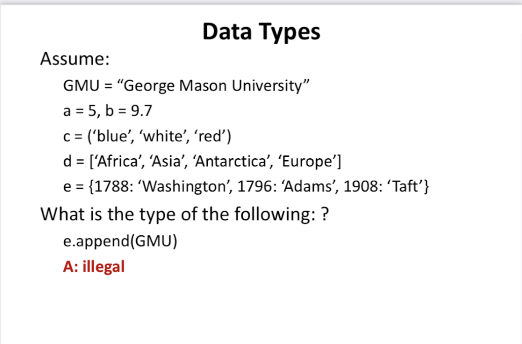
Assume:

GMU = “George Mason University”
a = 5, b = 9.7
c = (‘blue’, ‘white’, ‘red’)
d = [‘Africa’, ‘Asia’, ‘Antarctica’, ‘Europe’]
e = {1788: ‘Washington’, 1796: ‘Adams’, 1908: ‘Taft’}

What is the type of the following: ?

c.append(GMU)

A: illegal



Data Types

Assume:

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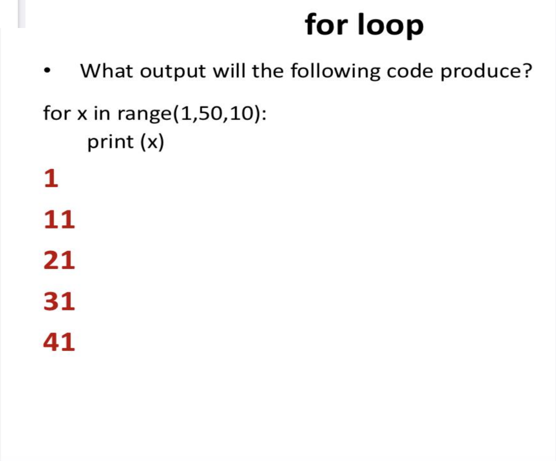
a = 5, b = 9.7
c = (‘blue’, ‘white’, ‘red’)
d = [‘Africa’, ‘Asia’, ‘Antarctica’, ‘Europe’]
e = {1788: ‘Washington’, 1796: ‘Adams’, 1908: ‘Taft’}

What is the type of the following: ?

e.append(GMU)

A: illegal

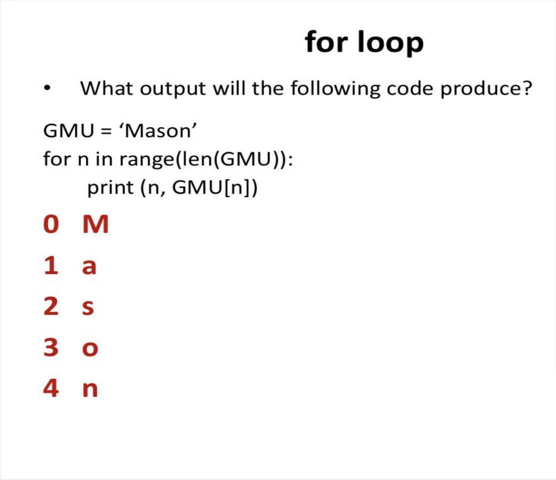


for loop

- What output will the following code produce?

```
for x in range(1,50,10):
    print (x)
```

```
1
11
21
31
41
```

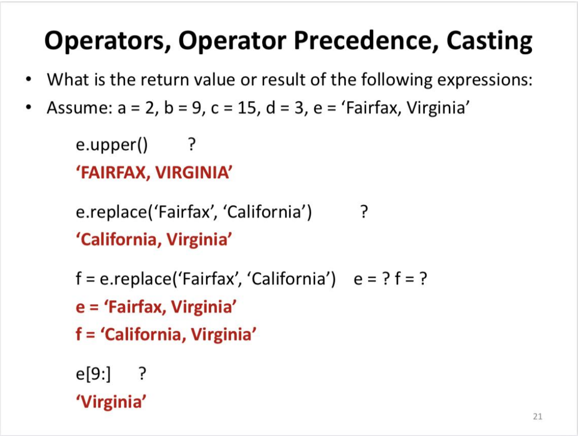


for loop

- What output will the following code produce?

```
GMU = ‘Mason’
for n in range(len(GMU)):
    print (n, GMU[n])
```

```
0  M
1  a
2  s
3  o
4  n
```



Operators, Operator Precedence, Casting

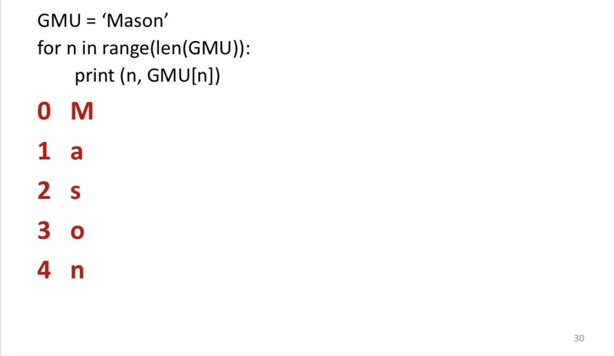
- What is the return value or result of the following expressions:
- Assume: a = 2, b = 9, c = 15, d = 3, e = ‘Fairfax, Virginia’

e.upper() ?
‘FAIRFAX, VIRGINIA’

e.replace(‘Fairfax’, ‘California’) ?
‘California, Virginia’

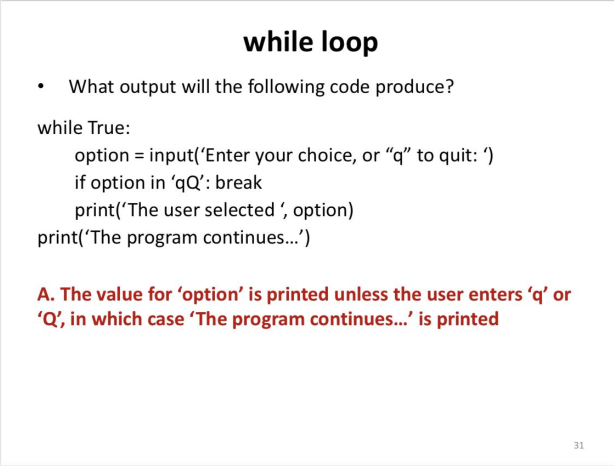
f = e.replace(‘Fairfax’, ‘California’) e = ? f = ?
e = ‘Fairfax, Virginia’
f = ‘California, Virginia’

e[9:] ?
‘Virginia’



```
GMU = ‘Mason’
for n in range(len(GMU)):
    print (n, GMU[n])
```

```
0  M
1  a
2  s
3  o
4  n
```

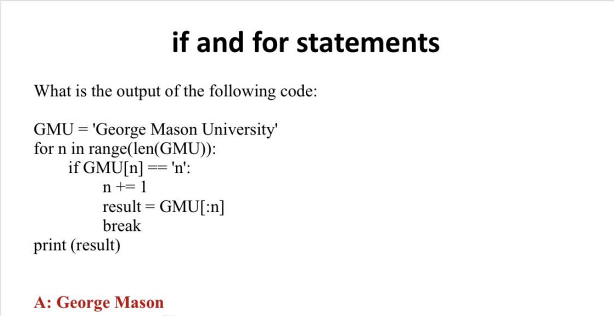


while loop

- What output will the following code produce?

```
while True:
    option = input(‘Enter your choice, or “q” to quit: ‘)
    if option in ‘qQ’: break
    print(‘The user selected ‘, option)
print(‘The program continues…’)
```

A. The value for ‘option’ is printed unless the user enters ‘q’ or ‘Q’, in which case ‘The program continues…’ is printed

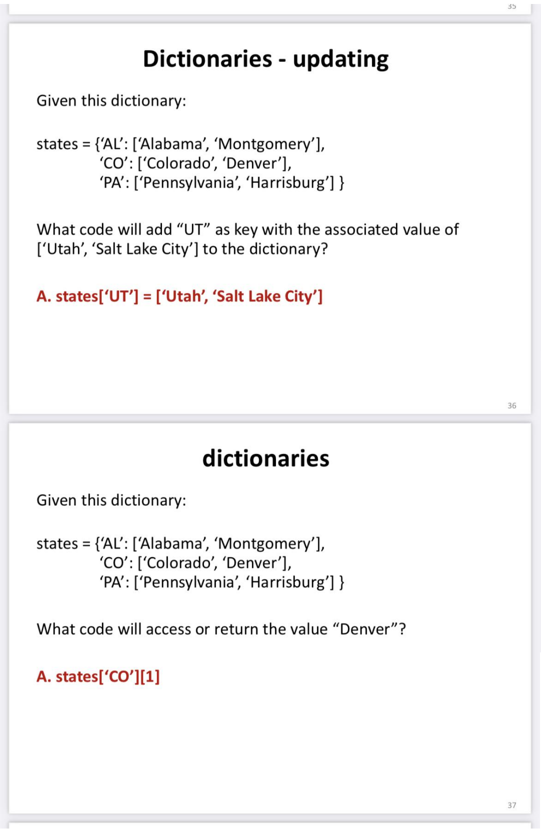


if and for statements

What is the output of the following code:

```
GMU = 'George Mason University'
for n in range(len(GMU)):
    if GMU[n] == 'n':
        n += 1
        result = GMU[:n]
        break
print (result)
```

A: George Mason



Dictionaries - updating

Given this dictionary:

```
states = {'AL': ['Alabama', 'Montgomery'],
          'CO': ['Colorado', 'Denver'],
          'PA': ['Pennsylvania', 'Harrisburg'] }
```

What code will add "UT" as key with the associated value of ['Utah', 'Salt Lake City'] to the dictionary?

A. states['UT'] = ['Utah', 'Salt Lake City']

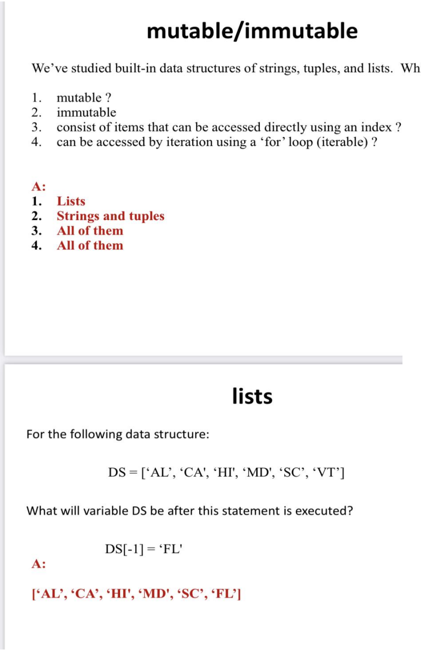
dictionaries

Given this dictionary:

```
states = {'AL': ['Alabama', 'Montgomery'],
          'CO': ['Colorado', 'Denver'],
          'PA': ['Pennsylvania', 'Harrisburg'] }
```

What code will access or return the value "Denver"?

A. states['CO'][1]



mutable/immutable

We've studied built-in data structures of strings, tuples, and lists. Which are

1. mutable ?
2. immutable
3. consist of items that can be accessed directly using an index ?
4. can be accessed by iteration using a 'for' loop (iterable) ?

A:

1. **Lists**
2. **Strings and tuples**
3. **All of them**
4. **All of them**

lists

For the following data structure:

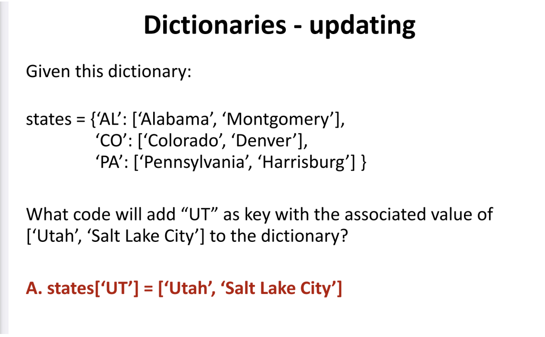
```
DS = ['AL', 'CA', 'HI', 'MD', 'SC', 'VT']
```

What will variable DS be after this statement is executed?

```
DS[-1] = 'FL'
```

A:

['AL', 'CA', 'HI', 'MD', 'SC', 'FL']



Dictionaries - updating

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```

What code will add "UT" as key with the associated value of ['Utah', 'Salt Lake City'] to the dictionary?

A. states['UT'] = ['Utah', 'Salt Lake City']

dictionaries

Given this dictionary:

```
states = {'AL': ['Alabama', 'Montgomery'],
          'CO': ['Colorado', 'Denver'],
          'PA': ['Pennsylvania', 'Harrisburg'] }
```

What code will access or return the value "Denver"?

A. states['CO'][1]

What code will create a dictionary called 'D' from a list like the following (i.e. the list could be longer or shorter) with the item name as key and price as value?

```
items = [[3.99, 'eggs'], [4.99, 'milk'], [7.99, 'Bass Ale']]
```

A:

```
D = { }
for i in items:
    D[i[1]] = i[0]
```

or

```
D = {i[1] : i[0] for i in items}
```

dictionaries

Given this dictionary:

```
states = {'AL': ['Alabama', 'Montgomery'],
          'CO': ['Colorado', 'Denver'],
          'PA': ['Pennsylvania', 'Harrisburg'] }
```

What will the following code display?

```
for s in states:
    print(s)
```

A. All the keys, or "AL", "CO", "PA"

What one line of code will create a dictionary called 'D' from a list like the following (i.e. the list could be longer or shorter) with the item name as key and price as value, but only include items costing more than $4.00?

```
items = [[3.99, 'eggs'], [4.99, 'milk'], [7.99, 'Bass Ale']]
```

A:

```
D = {i[1]: i[0] for i in items if i[0] > 4 }
```

Show the code that will create a dictionary called "presidents" with (1) a key of integer 1 and the associated value of "Washington", (2) a key of 2 with value "Adams", and a key of 3 with value "Jefferson".

A. presidents = {1: "Washington", 2: "Adams", 3: "Jefferson"}

The variables below have the indicated definition assignments.

```
A = len('George Mason University')
B = len(['A', 'B', 'C', 'D', 'E', 'F'])
C = len( ('alpha', 'beta', 'gamma', 'delta', 'epsilon') )
```

What are the values of:

1. C
2. B
3. A

A:

1. **5**
2. **6**
3. **23**