

# INTRODUCTION TO PROGRAMMING USING PYTHON: PART 01

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## 1. HOTSPOT

You are writing a Python program to validate employee numbers.

The employee number must have the format ddd-dd-dddd and consist only of numbers and dashes. The program must print True if the format is correct and print False if the format is incorrect.

How should you complete the code?

To answer, select the appropriate code segments in the answer area.

```
Employee_number = ""  
Employee_number = "sentinel"  
  
parts = ""  
  
while employee_number != "":  
while employee_number != "sentinel":  
  
valid = False  
valid = True  
  
employee_number = input("Enter employee number (ddd-dd-dddd): ")  
parts = employee_number.split('-')  
  
if len(parts) == 3:  
  
    if len(parts[0]) == 3 and len(parts[1]) == 2 and len(parts[2]) == 4:  
  
        if parts[0].isdigit() and parts[1].isdigit() and parts[2].isdigit():  
  
            valid = True  
  
print(valid)
```

## 2. HOTSPOT

You are coding a math utility by using Python.

You are writing a function to compute roots.

The function must meet the following requirements:

If a is non-negative, return  $a^{1/b}$   
If a is negative and even, return "Result is an imaginary number"  
If a is negative and odd, return  $-(-a)^{1/b}$

How should you complete the code? To answer, select the appropriate code segments in the answer area.

```
def safe_root(a, b):
```

```
    if a >= 0:  
        if a % 2 == 0:  
            else:  
                elif:
```

```
        answer = a**(1/b)
```

```
    if a >= 0:  
        if a % 2 == 0:  
            else:  
                elif:
```

```
    if a >= 0:  
        if a % 2 == 0:  
            else:  
                elif:
```

```
        answer = "Result is an imaginary number"
```

```
    if a >= 0:  
        if a % 2 == 0:  
            else:  
                elif:
```

```
        answer = -(-a)**(1/b)
```

```
    return answer
```

### 3. HOTSPOT

You work for a company that distributes media for all ages.

You are writing a function that assigns a rating based on a user's age. The function must meet the following requirements:

Anyone 18 years old or older receives a rating of "A"  
Anyone 13 or older, but younger than 18, receives a rating of "T"  
Anyone 12 years old or younger receives a rating of "C"  
If the age is unknown, the rating is set to "C"

You need to complete the code to meet the requirements.

How should you complete the code? To answer, select the appropriate code segments in the answer area.

```
def get_rating(age):
    rating = ""
    if
        age < 13: rating = "C"
        age < 18: rating = "T"
        : rating = "A"
        age == None: rating = "C"

    elif
        age < 13: rating = "C"
        age < 18: rating = "T"
        : rating = "A"
        age == None: rating = "C"

    elif
        age < 13: rating = "C"
        age < 18: rating = "T"
        : rating = "A"
        age == None: rating = "C"

    else
        age < 13: rating = "C"
        age < 18: rating = "T"
        : rating = "A"
        age == None: rating = "C"

    return rating
```

## 4. HOTSPOT

You are designing a decision structure to convert a student's numeric grade to a letter grade. The program must assign a letter grade as specified in the following table:

Percentage range	Letter grade
90 through 100	A
80 through 89	B
70 through 79	C
65 through 69	D
0 through 64	F

For example, if the user enters a 90, the output should be, "Your letter grade is A". Likewise, if a user enters an 89, the output should be "Your letter grade is B".

How should you complete the code? To answer, select the appropriate code segments in the answer area.

```
#Letter Grade Converter

grade = int(input("Enter a numeric grade"))
```

```
if grade <= 90:  
if grade >= 90:  
elif grade > 90:  
elif grade >= 90:
```

```
letter_grade = 'A'
```

```
if grade > 80:  
if grade >= 80:  
elif grade > 80:  
elif grade >= 80:
```

```
letter_grade = 'B'
```

```
if grade > 70:  
if grade >= 70:  
elif grade > 70:  
elif grade >= 70:
```

```
letter_grade = 'C'
```

```
if grade > 65:  
if grade >= 65:  
elif grade > 65:  
elif grade >= 65:
```

```
letter_grade = 'D'
```

```
else:
```

```
letter_grade = 'F'
```

## 5. HOTSPOT

You are developing a Python application for an online product distribution company.

You need the program to iterate through a list of products and escape when a target product ID is found.

How should you complete the code? To answer, select the appropriate code segments in the answer area.

**NOTE:** Each correct selection is worth one point.

```
productIdList = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
index = 0
```

A code editor interface with a dropdown menu at the top right. Below it is a list of code segments: 'while', 'for', 'if', and 'break'. Each segment is contained within its own red-bordered box.

```
(index < 10) :
```

```
    print(productIdList[index])
```

```
    if productIdList[index] == 6 :
```

A code editor interface with a dropdown menu at the top right. Below it is a list of code segments: 'while', 'for', 'if', and 'break'. Each segment is contained within its own red-bordered box.

```
        else :
```

## 6. DRAG DROP

You are building a Python program that displays all of the prime numbers from 2 to 100.

How should you complete the code? To answer, drag the appropriate code segments to the correct location. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

**NOTE:** Each correct selection is worth one point.

```
0 p = 2  
while p <= 100:  
    is_prime = True
```

```
0 break
```

```
0 p = p + 1
```

```
0 for i in range(2, p):  
    if p % i == 0:  
        is_prime = False
```

```
0 p = 2  
is_prime = True  
while p <= 100:
```

```
0 continue
```

```
0 for i in range(2, p):  
    if p / i == 0:  
        is_prime = False
```

## 7. DRAG DROP

You are creating a Python script to evaluate input and check for upper and lower case.

Which four code segments should you use to develop the solution? To answer, move the appropriate code segment from the list of code segments to the answer area and arrange them in the correct order.

```
0 else:  
    print(name, "is mixed case.")
```

```
0
```

```
0 else:  
    print(name, "is lower case.")
```

```
0
```

```
0 name = input("Enter your name: ")
```

```
0
```

```
0 else:  
    print(name, "is upper case.")
```

```
0
```

```
0 elif name.upper() == name:  
    print(name, "is all upper case.")
```

```
0
```

```
0 if name.lower() == name:  
    print(name, "is all lower case.")
```

```
0
```

## 8. HOTSPOT

You develop a Python application for your company.

You have the following code. Line numbers are included for reference only.

```
01 def main(a,b,c,d):
02     value = a+b*c-d
03     return value
```

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Use the drop-down menus to select the answer choice that answers each question based on the information presented in the code segment.

Which part of the expression will be evaluated first?

a+b
b*c
c-d

Which operation will be evaluated second?

addition
subtraction

Which expression is equivalent to the expression in the function?

(a+b) * (c-d)
(a + (b*c)) - d
a + ((b * c) - d)

The ABC company has hired you as an intern on the coding team that creates e-commerce applications.

You must write a script that asks the user for a value. The value must be used as a whole number in a calculation, even if the user enters a decimal value.

You need to write the code to meet the requirements.

Which code segment should you use?

- A. totalItems = input("How many items would you like?")
- B. **totalItems = float(input("How many items would you like?"))**
- C. totalItems = str(input("How many items would you like?"))
- D. totalItems = int(input("How many items would you like?"))

## 9. HOTSPOT

You create the following program to locate a conference room and display the room name. Line numbers are included for reference only.

```
01 rooms = {1: 'Foyer', 2: 'Conference Room'}
02 room = input('Enter the room number: ')
03 if not room in rooms:
04     print('Room does not exist.')
05 else:
06     print("The room name is " + rooms[room])
```

Colleagues report that the program sometimes produces incorrect results.

You need to troubleshoot the program. Use the drop-down menus to select the answer choice that answers each question based on the information presented in the code segment.

Which two data types are stored in the `rooms` list at line 01?

bool and string
float and bool
int and string
float and int

What is the data type of `room` at line 02?

bool
float
int
string

Why does line 03 fail to find the rooms?

Invalid syntax
Mismatched data type(s)
Misnamed variable(s)

## 10.HOTSPOT

During school holidays, you volunteer to explain some basic programming concepts to younger siblings. You want to introduce the concept of data types in Python. You create the following three code segments:

```
# Code segment 1
x1 = "20"
y1 = 3
a = x1 * y1

# Code segment 2
x2 = 6
y2 = 4
b = x2 / y2

# Code segment 3
x3 = 2.5
y3 = 1
c = x3 / y3
```

You need to evaluate the code segments.

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

	Yes	No
After executing code segment 1, the data type of variable <code>a</code> is <code>str</code> .	<input checked="" type="radio"/>	<input type="radio"/>
After executing code segment 2, the data type of variable <code>b</code> is <code>float</code> .	<input type="radio"/>	<input checked="" type="radio"/>
After executing code segment 3, the data type of variable <code>c</code> is <code>int</code> .	<input checked="" type="radio"/>	<input type="radio"/>

## 11.DRAG DROP

Match the data type to the type operations.

To answer, drag the appropriate data type to the correct type operation. Each data type may be used once, more than once, or not at all.

### Data Types

0 <code>int</code>	0 <code>float</code>	0 <code>str</code>	0 <code>bool</code>
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### Answer Area

`type (+1E10)`

`type (5.0)`

`type ("True")`

`type (False)`

## 12.HOTSPOT

The ABC company needs a way to find the count of particular letters in their publications to ensure that there is a good balance. It seems that there have been complaints about overuse of the letter e. You need to create a function to meet the requirements.

How should you complete this code? To answer, select the appropriate code segments in the answer area.

**NOTE:** Each correct selection is worth one point.

```

#Function accepts list of words from a file,
#and letter to search for.
#Returns count of a particular letter in that list.

def count_letter(letter, word_list):
    count=0
    for word in word_list:
        if word == letter:
            count += 1
    return count

word_list = []

#word_list is populated a from file. Code not shown.

letter = input("which letter would you like to count")
letter_count= count_letter(letter, word_list)
print("There are: ", letter_count, " instances of " + letter)

```

### 13.HOTSPOT

The ABC Video company needs a way to determine the cost that a customer will pay for renting a DVD. The cost is dependent on the time of day the DVD is returned. However, there are also special rates on Thursdays and Sundays. The fee structure is shown in the following list:

- The cost is \$1.59 per night.
- If the DVD is returned after 8 PM, the customer will be charged an extra day.
- If the video is rented on a Sunday, the customer gets 30% off for as long as they keep the video.
- If the video is rented on a Thursday, the customer gets 50% off for as long as they keep the video.

You need to write code to meet the requirements.

How should you complete the code? To answer, select the appropriate code segments in the answer area.

```
# ABC      Video, DVD Rental Calculator

ontime = input("Was video returned before 8 pm? y or n").lower()

days_rented = int(input("How many days was video rented?"))

day_rented = input("What day was the video rented?").capitalize()

cost_per_day = 1.59

if ontime
    != "n":
    == "n":
    == "y":

    days_rented +=1

if day_rented
    == "Sunday ":
    >= "Sunday ":
    is " Sunday ":

    total = (days_rented * cost_per_day) * .7

elif day_rented
    == "Thursday":
    <= "Thursday":
    is "Thursday":

    total = (days_rented * cost_per_day) * .5

else:
    total = days_rented * cost_per_day

print("Cost of the DVD rental is : $", total)
```

## 14.DRAG DROP

The ABC company is converting an existing application to Python. You are creating documentation that will be used by several interns who are working on the team.

You need to ensure that arithmetic expressions are coded correctly.

What is the correct order of operations for the six classes of operations ordered from first to last in order of precedence? To answer, move all operations from the list of operations to the answer area and arrange them in the correct order.

### Operations

- Parenthesis
- Exponents
- And
- Multiplication and Division
- Addition and Subtraction
- Unary positive, negative, not

### Answer Area

<input type="checkbox"/>

## 15.DRAG DROP

You are writing a Python program. The program collects customer data and stores it in a database.

The program handles a wide variety of data.

You need to ensure that the program handles the data correctly so that it can be stored in the database correctly.

Match the data type to the code segment. To answer, drag the appropriate data type from the column on the left to its code segment on the right. Each data type may be used once, more than once, or not at all.

### Operations

- bool
- float
- int
- str

### Answer Area

<input type="checkbox"/>	age = 2
<input type="checkbox"/>	minor = False
<input type="checkbox"/>	name = "Contoso"
<input type="checkbox"/>	weight = 123.5
<input type="checkbox"/>	zip = "81000"

#### Question14

You are creating a Python program that shows a congratulation message to employees on their service anniversary.

You need to calculate the number of years of service and print a congratulatory message.

You have written the following code. Line numbers are included for reference only.

```
01 start = input("How old were you on your start date?")
02 end = input("How old are you today?")
03
```

You need to complete the program.

Which code should you use at line 03?

- A. `print("Congratulations on" + (int(end)-int(start)) +  
"years of service!")`
- B. `print("Congratulations on" + str(int(end)-int(start)) +  
"years of service!")`
- C. `print("Congratulations on" + int(end - start) +  
"years of service!")`
- D. `print("Congratulations on" + str(end - start)) +  
"years of service!")`

#### 16.HOTSPOT

You are developing a Python application for your company.

You write the following code:

```
numList = [1,2,3,4,5]
alphaList = ["a","b","c","d","e"]
print(numList is alphaList)
print(numList == alphaList)
numList = alphaList
print(numList is alphaList)
print(numList == alphaList)
```

Use the drop-down menus to select the answer choice that answers each question based on the information presented in the code segment.

What is displayed after the first print?

True
False

What is displayed after the second print?

True
False

What is displayed after the third print?

True
False

What is displayed after the fourth print?

True
False

## 17.DRAG DROP

You are writing a Python program to perform arithmetic operations.

You create the following code:

```
a = 11  
b = 4
```

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What is the result of each arithmetic expression? To answer, drag the appropriate expression from the column on the left to its result on the right. Each expression may be used once, more than once, or not at all.

### Results

- `print(a / b)`
- `print(a // b)`
- `print(a % b)`

### Answer Area

- 2
- 3
- 2.75

## 18.DRAG DROP

You are writing a Python program that evaluates an arithmetic formula.

The formula is described as b equals a multiplied by negative one, then raised to the second power, where a is the value that will be input and b is the result.

You create the following code segment. Line numbers are included for reference only.

```
01 a = eval(input("Enter a number for the equation: "))
02 b =
```

You need to ensure that the result is correct.

How should you complete the code on line 02? To answer, drag the appropriate code segment to the correct location. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

**Code Segments**

0 -	0 (	0 )	0 **	0 **2	0 2	0 a
-----	-----	-----	------	-------	-----	-----

**Answer Area**

b = 

0	0	0	0	0
---	---	---	---	---