

Homework 4

(1) What is the output of the following code snippet?

```
if None:  
    print("Hello")
```

- A. False
- B. Hello
- C. Output nothing
- D. Error out.

(2) For Python's

if...elif...else

statement, only one block of the code will be executed.

- A. Correct.
- B. Incorrect
- C. Depending on the situation
- D. Python has no "elif"

(3) What is the output of the following code snippet?

```
for i in [1, 0]:  
    print(i+1)
```

- A. 2
1
- B. [2, 1]
- C. 2
- D. 0

(4) In Python, “for” and “while” can have “else” statement. Which of the follow answers are correct? Check all applies.

- A. Only “for” can have “else”.
- B. Only “while” can have “else”.
- C. “for” and “while” both can have “else”.
- D. Neither “for” nor “while” can have “else”.

(5) What is the output of the following code snippet?

```
i = sum = 0

while i <= 4:
    sum += i
    i = i+1

print(sum)
```

- A. 0
- B. 10
- C. 4
- D. None of the above.

(6) What is the output of the following code snippet?

```
while 4 == 4:
    print('4')
```

- A. print out single "4"
- B. print out four "4"s
- C. it will keep print out "4" infinitely until the program interrupts.
- D. Program error out with exception.

(7) Which following statements are correct? Check all applies.

- A. "break" is used to stop the current loop.
- B. "continue" is used to skip the remaining statement in the loop.
- C. "break" and "continue" usually are used with "if, if...else" and "if...elif...else".
- D. All above are correct.

(8) What is the output of the following code snippet?

```
for char in 'PYTHON STRING':  
    if char == ' ':  
        break  
  
    print(char, end='')  
  
    if char == '0':  
        continue
```

- A. PYTHON
- B. PYTHONSTRING
- C. PYTHN
- D. STRING

(9) The result of expression $3*1**3$ is:

- A. 27
- B. 9
- C. 3

D. 1

(10) What is the output of the following code snippet?

```
x = True
y = False
z = False

if x or y and z:
    print("yes")
else:
    print("no")
```

- A. yes
- B. no
- C. Execution error

(11) What is the output of the following code snippet?

```
x = True
y = False
z = False

if not x or y:
    print(1)
elif not x or not y and z:
    print(2)
elif not x or y or not y and x:
    print(3)
else:
    print(4)
```

- A. 1
- B. 2

- C. 3
- D. 4

(12) What is the output of the following code snippet?

```
def greetPerson(*name):  
    print('Hello', name)  
  
greetPerson('Runoob', 'Google')
```

- A. Hello Runoob
Hello Google
- B. Hello ('Runoob', 'Google')
- C. Hello Runoob
- D. Execution Error

(13) Question:

Write a program which will find all such numbers which are divisible by 7 but are not a multiple of 5, between 2000 and 3200 (both included). The numbers obtained should be printed in a comma-separated sequence on a single line.

Hints:

Consider use range(begin, end) method

Solution:

```
l=[]  
for i in range(2000, 3201):  
    if (i%7==0) and (i%5!=0):  
        l.append(str(i))  
  
print ','.join(l)
```

(14) Question:

With a given integral number n , write a program to generate a dictionary that contains $(i, i*i)$ such that i is an integral number between 1 and n (both included). and then the program should print the dictionary. Suppose the following input is supplied to the program:

8

Then, the output should be:

{1: 1, 2: 4, 3: 9, 4: 16, 5: 25, 6: 36, 7: 49, 8: 64}

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

Consider use dict()

(15) Question:

Write a program which accepts a sequence of comma-separated numbers from console and generate a list and a tuple which contains every number.

Suppose the following input is supplied to the program:

34,67,55,33,12,98

Then, the output should be:

['34', '67', '55', '33', '12', '98']

('34', '67', '55', '33', '12', '98')

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input. tuple() method can convert list to tuple

(16) Question:

Define a class which has at least two methods:

getString: to get a string from console input

printString: to print the string in upper case.

Also please include simple test function to test the class methods.

Hints:

Use `__init__` method to construct some parameters

(17) Question:

Write a program that calculates and prints the value according to the given formula:

$Q = \text{Square root of } [(2 * C * D)/H]$

Following are the fixed values of C and H:

C is 50. H is 30.

D is the variable whose values should be input to your program in a comma-separated sequence.

Example

Let us assume the following comma separated input sequence is given to the program:

100,150,180

The output of the program should be:

18,22,24

Hints:

If the output received is in decimal form, it should be rounded off to its nearest value (for example, if the output received is 26.0, it should be printed as 26)

In case of input data being supplied to the question, it should be assumed to be a console input.

(18) Question:

Write a program that accepts a comma separated sequence of words as input and prints the words in a comma-separated sequence after sorting them alphabetically.

Suppose the following input is supplied to the program:

without,hello,bag,world

Then, the output should be:

bag,hello,without,world

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

(19) Question:

Write a program that accepts sequence of lines as input and prints the lines after making all characters in the sentence capitalized.

Suppose the following input is supplied to the program:

Hello world

Practice makes perfect

Then, the output should be:

HELLO WORLD

PRACTICE MAKES PERFECT

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

(20) Question:

Write a program which accepts a sequence of comma separated 4-digit binary numbers as its input and

then check whether they are divisible by 5 or not.
The numbers that are divisible by 5 are to be printed
in a comma separated sequence.

Example:

0100,0011,1010,1001

Then the output should be:

1010

Notes: Assume the data is input by console.

Hints:

In case of input data being supplied to the question,
it should be assumed to be a console input.

(21) Question:

Write a program that accepts a sentence and calculate
the number of upper case letters and lower case
letters.

Suppose the following input is supplied to the
program:

Hello world!

Then, the output should be:

UPPER CASE 1

LOWER CASE 9

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

(22) What is the correct output of the following code snippet:

```
values = raw_input()
numbers = [x for x in values.split(",") if int(x)%2!=0]
print ",".join(numbers)
```

Suppose the following input is supplied to the program:

1,2,3,4,5,6,7,8,9

- A. 1,2,3,4,5,6,7,8,9
- B. 2,4,6,8,
- C. 1,1,1,1
- D. 1,3,5,7,9

(23) Question:

Write a program that computes the net amount of a bank account based a transaction log from console input. The transaction log format is shown as following:

D 100

W 200

D means deposit while W means withdrawal.

Suppose the following input is supplied to the program:

D 300

D 300

W 200

D 100

Then, the output should be:

500

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

(24) Question:

A website requires the users to input username and password to register. Write a program to check the validity of password input by users.

Following are the criteria for checking the password:

1. At least 1 letter between [a-z]
2. At least 1 number between [0-9]

1. At least 1 letter between [A-Z]
3. At least 1 character from [\$#@]
4. Minimum length of transaction password: 6
5. Maximum length of transaction password: 12

Your program should accept a sequence of comma separated passwords and will check them according to the above criteria. Passwords that match the criteria are to be printed, each separated by a comma.

Example

If the following passwords are given as input to the program:

ABd1234@1,a F1#,2w3E*,2We3345

Then, the output of the program should be:

ABd1234@1

Hints:

In case of input data being supplied to the question, it should be assumed to be a console input.

(25) Question:

Define a class named American which has a static method called printNationality.

Hints:

Use @staticmethod decorator to define class static method.

(25) Question:

Define a class named Shape and its subclass Square. The Square class has an init function which takes a length as argument. Both classes have a area function which can print the area of the shape where Shape's area is 0 by default.

Hints:

To override a method in super class, we can define a method with the same name in the super class.

(26) Question:

Assuming that we have some email addresses in the "username@companyname.com" format, please write program to print the user name of a given email address. Both user names and company names are composed of letters only.

Example:

If the following email address is given as input to the program:

john@google.com

Then, the output of the program should be:

john

In case of input data being supplied to the question, it should be assumed to be a console input.

Hints:

Use \w to match letters.

(27) Question:

Please write a program to print the running time of execution of "1+1" for 100 times.

Hints:

Use `timeit()` function to measure the running time.

(28) Question:

Please write a program to generate all sentences where subject is in ["I", "You"] and verb is in ["Play", "Love"] and the object is in ["Hockey", "Football"].

Hints:

Use `list[index]` notation to get an element from a list.

(29) Question:

Please write a program to print the list after removing delete even numbers in [5,6,77,45,22,12,24].

Hints:

Use list comprehension to delete a bunch of elements from a list.

(30) Question:

With two given lists [1,3,6,78,35,55] and [12,24,35,24,88,120,155], write a program to make a list whose elements are intersection of the above given lists.

Hints:

Use set() and "&=" to do set intersection operation.