

BATIN, KATRINA RICCI C.

BSCOE 2-6

Subject: Data Structure and Algorithm

Lab Activity: Python review

Deadline: Oct 2, 11:59pm

Upload your answer : https://docs.google.com/forms/d/e/1FAIpQLSdoc8mZxlanXUEOF_j5-1C1NCB9Makd-yTV2_WH_wROIVBOrQ/viewform?usp=pp_url

1. Diamond Shape:

Write a Python function named print diamond that takes an odd integer n as an argument and prints a diamond shape with a width of n using the * character.

For n = 5, the output should be:

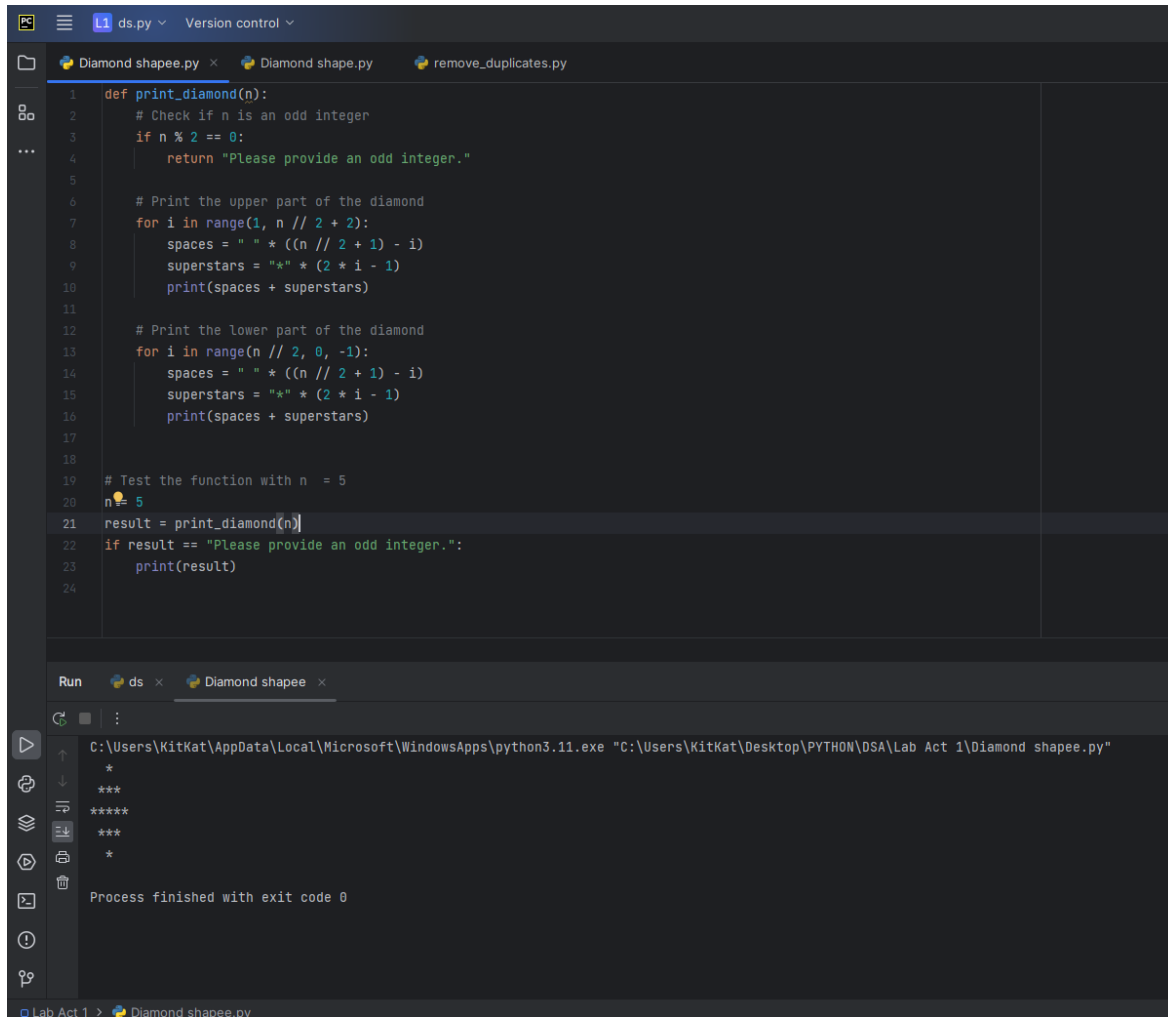
```
*  
  
***  
  
*****  
  
***  
  
*
```

Note: If an even number is passed, the function should return "Please provide an odd integer."

SOURCE CODE:

```
def print_diamond(n):  
    # Check if n is an odd integer  
    if n % 2 == 0:  
        return "Please provide an odd integer."  
  
    # Print the upper part of the diamond  
    for i in range(1, n // 2 + 2):  
        spaces = " " * ((n // 2 + 1) - i)  
        superstars = "*" * (2 * i - 1)  
        print(spaces + superstars)  
  
    # Print the lower part of the diamond  
    for i in range(n // 2, 0, -1):  
        spaces = " " * ((n // 2 + 1) - i)  
        superstars = "*" * (2 * i - 1)  
        print(spaces + superstars)  
  
# Test the function with n = 5  
n = 5  
result = print_diamond(n)  
if result == "Please provide an odd integer."  
    print(result)
```

OUTPUT



```
1 def print_diamond(n):
2     # Check if n is an odd integer
3     if n % 2 == 0:
4         return "Please provide an odd integer."
5
6     # Print the upper part of the diamond
7     for i in range(1, n // 2 + 2):
8         spaces = " " * ((n // 2 + 1) - i)
9         superstars = "*" * (2 * i - 1)
10        print(spaces + superstars)
11
12    # Print the lower part of the diamond
13    for i in range(n // 2, 0, -1):
14        spaces = " " * ((n // 2 + 1) - i)
15        superstars = "*" * (2 * i - 1)
16        print(spaces + superstars)
17
18    # Test the function with n = 5
19    n = 5
20    result = print_diamond(n)
21    if result == "Please provide an odd integer.":
22        print(result)
23
24
```

Run ds x Diamond shapee x

```
C:\Users\KitKat\AppData\Local\Microsoft\WindowsApps\python3.11.exe "C:\Users\KitKat\Desktop\PYTHON\DSA\Lab Act 1\Diamond shapee.py"
*
***
*****
***
*
Process finished with exit code 0
```

2. Create a program that will delete all duplicate characters in a string.

Input starts with a number N and is followed by N strings

Output: Print the character with all the duplicate characters removed.

Sample Input #1

```
4
Harrenhal
Drogos
Thoros of Myr
Iron Born
```

Sample Output #1

```
enl
Drgs
ThsfMy
IB
```

C:

```
# Function to remove duplicate characters from a string
def remove_duplicates(input_str):
    result = ""
    seen = set()
    duplicate = set()

    for char in input_str:
        if char not in seen and char != ' ':
            seen.add(char)
        # Add in duplicate
        elif char in seen:
            duplicate.add(char)

    # Refining the results
    for char in seen:
        if char not in duplicate:
            result += char

    return result

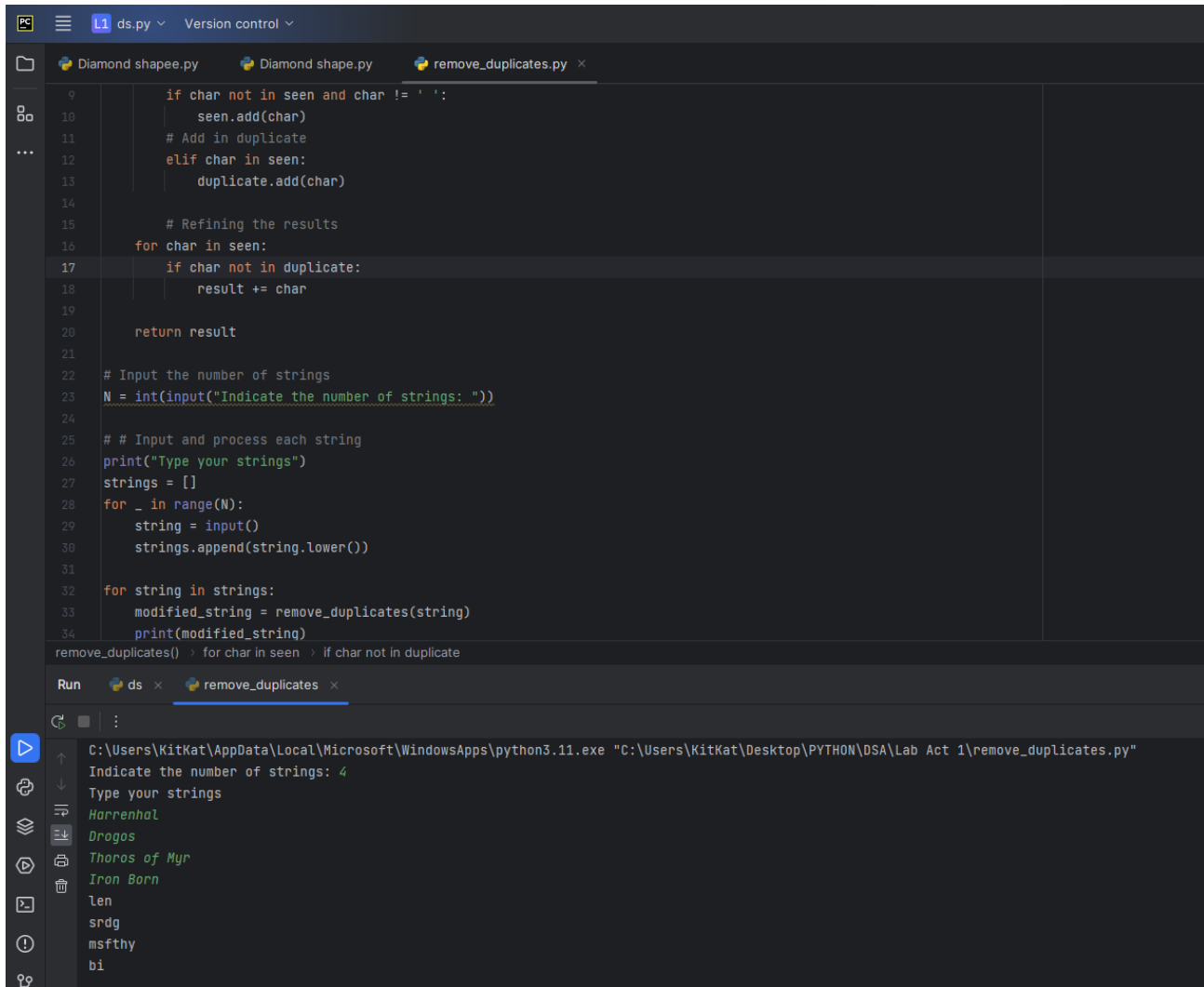
# Input the number of strings
N = int(input("Indicate the number of strings: "))

# # Input and process each string
print("Type your strings")
strings = []
for _ in range(N):
    string = input()
    strings.append(string.lower())

for string in strings:
    modified_string = remove_duplicates(string)
    print(modified_string)
```

S

OUTPUT



```
9         if char not in seen and char != ' ':
10             seen.add(char)
11             # Add in duplicate
12             elif char in seen:
13                 duplicate.add(char)
14
15         # Refining the results
16         for char in seen:
17             if char not in duplicate:
18                 result += char
19
20         return result
21
22     # Input the number of strings
23     N = int(input("Indicate the number of strings: "))
24
25     # # Input and process each string
26     print("Type your strings")
27     strings = []
28     for _ in range(N):
29         string = input()
30         strings.append(string.lower())
31
32     for string in strings:
33         modified_string = remove_duplicates(string)
34         print(modified_string)
```

remove_duplicates() → for char in seen → if char not in duplicate

Run ds × remove_duplicates ×

C:\Users\KitKat\AppData\Local\Microsoft\WindowsApps\python3.11.exe "C:\Users\KitKat\Desktop\PYTHON\DSA\Lab Act 1\remove_duplicates.py"

Indicate the number of strings: 4

Type your strings

Harrenhal

Dragos

Thoros of Myr

Iron Born

len

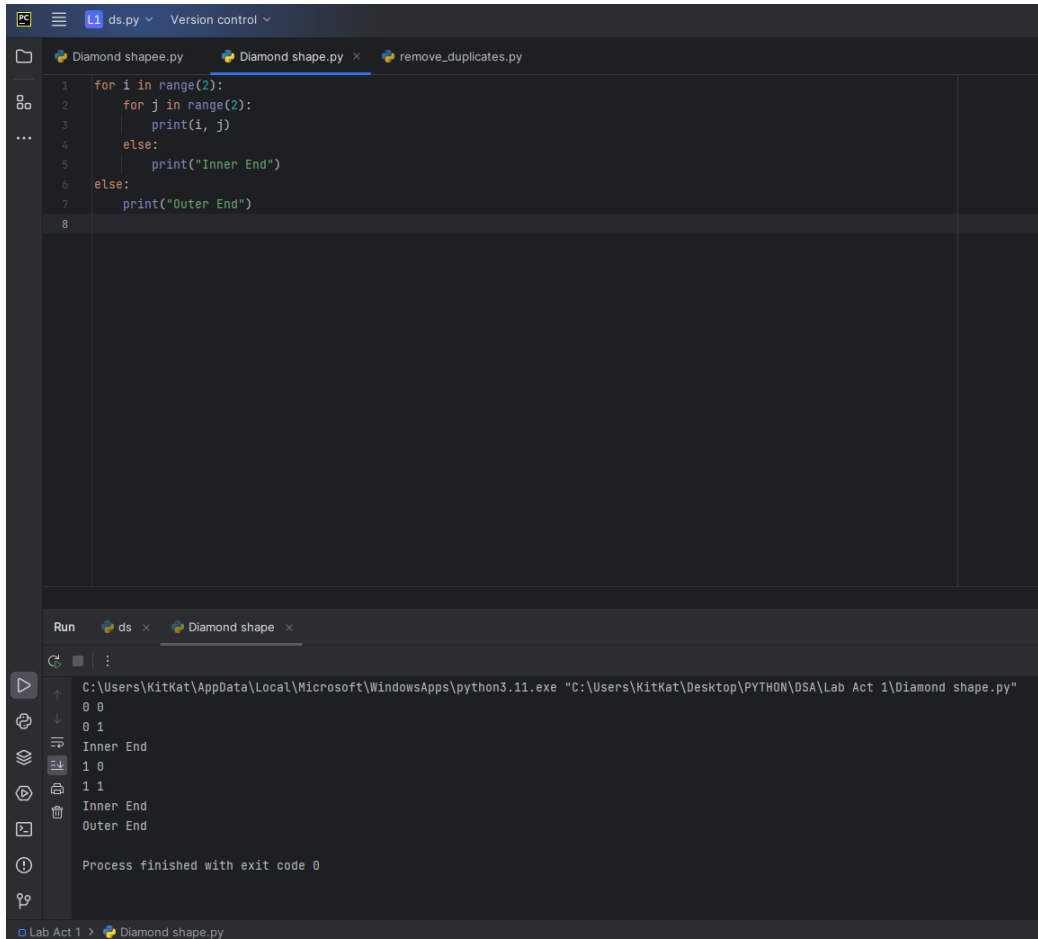
srdg

msfthy

bi

3. What is the output of the code below:

```
for i in range(2):
    for j in range(2):
        print(i, j)
    else:
        print("Inner End")
else:
    print("Outer End")
```



The screenshot shows a Python IDE with a dark theme. The editor window displays a file named 'Diamond shapee.py' containing the following code:

```
1 for i in range(2):
2     for j in range(2):
3         print(i, j)
4     else:
5         print("Inner End")
6 else:
7     print("Outer End")
8
```

Below the editor, the 'Run' console shows the output of the program:

```
0 0
0 1
Inner End
1 0
1 1
Inner End
Outer End
Process finished with exit code 0
```

The status bar at the bottom indicates 'Lab Act 1 > Diamond shape.py'.