Lab 2

Terrence Jackson

SDEV 300: Building Secure Python Applications

Professor Howard

Mar 26, 2024

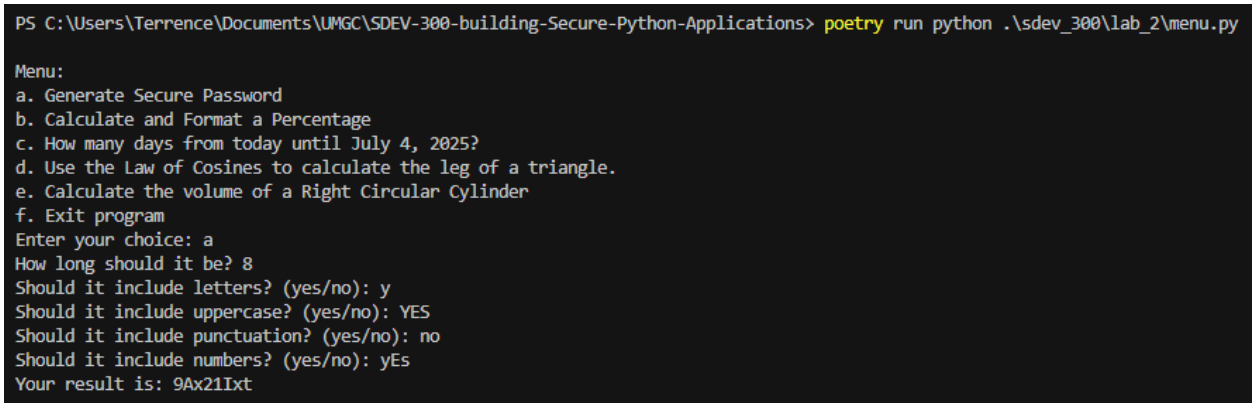
Test Cases

	Input	Expected	Actual	Pass?
Test Case 1: Generate Password — Lowercase and Uppercase Letters, Numbers	Choice = a Length = 8, Letters = yes, Uppercase = yes, Punctuation = no, Numbers = yes	Password of length 8 with lowercase and uppercase letters, and numbers.	9Ax21Ixt	Yes
Test Case 2: Generate Password — Lowercase Letters, Punctuation	Choice = a Length = 12, Letters = yes, Uppercase = no, Punctuation = yes, Numbers = no	Password of length 12 with lowercase letters and punctuation.	"&':d$nwn{d}	Yes
Test Case 3: Generate Password — Uppercase Letters, Punctuation	Choice = a Length = 10, Letters = no, Punctuation = yes, Numbers = no	Password of length 10 with only punctuation.	&]]|=>}/$?	Yes
Test Case 4: Percentage to 3 Points	Choice = b Numerator = 22, Denominator = 57, Decimal points = 3	38.596%	38.596%	Yes

Test Case 5: Percentage Zero Padded	Choice = b Numerator = 5, Denominator = 10, Decimal points = 2	50.00%	50.00%	Yes
Test Case 6: Days Until July 4, 2025	Choice = c	471	471	Yes
Test Case 7: Law of Cosines	Choice = d Side_a = 5, Side_b = 7, Angle = 45	4.95	4.95	Yes
Test Case 8: Volume of Cylinder	Choice = e Radius = 3.5, Height = 10	384.8451	384.8451	Yes
Test Case 9: Invalid Menu Option	Choice = g	Invalid, re-prompt	Invalid, re-prompt	Yes
Test Case 10: Invalid int	Choice = b Numerator =18, Denominator = 0	Invalid, re-prompt	Invalid, re-prompt	Yes
Test Case 11: Invalid float	Choice = d Side_a = 10, Side_b = 0	Invalid, re-prompt	Invalid, re-prompt	Yes

Test Case 12: Invalid y/n	Choice = a Length = 10, Letters = apple	Invalid, re-prompt	Invalid, re-prompt	Yes
Test Case 13: No Character Set Chosen	Choice = a Length = 10, Letters = no, Uppercase = no, Punctuation = no, Numbers = no	Invalid, re-prompt	Invalid, re-prompt	Yes
Test Case 14: Quit	Choice = f	Quit	Quit	Yes

Test Case 1:



Test Case 2:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: a
How long should it be? 12
Should it include letters? (yes/no): y
Should it include uppercase? (yes/no): n
Should it include punctuation? (yes/no): y
Should it include numbers? (yes/no): n
Your result is: "&':d$nwn{d}
```

Test Case 3:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: a
How long should it be? 10
Should it include letters? (yes/no): n
Should it include punctuation? (yes/no): y
Should it include numbers? (yes/no): n
Your result is: &]]|=>}/$?
```

Test Case 4:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: b
Enter numerator: 22
Enter denominator: 57
Enter number of decimal places to display: 3
Your result is: 38.596%
```

Test Case 5:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: b
Enter numerator: 5
Enter denominator: 10
Enter number of decimal places to display: 2
Your result is: 50.00%
```

Test Case 6:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: c
Your result is: 471
```

Test Case 7:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: d
Enter side_a: 5
Enter side_b:
Invalid, please input a number greater than 0.
Enter side_b: 7
Enter the angle between the sides in degrees: 45
Your result is: 4.95
```

Test Case 8:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: e
Enter radius: 3.5
Enter height: 10
Your result is: 384.8451
```

Test Case 9:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: g
Invalid choice. Please enter a valid option.
```

Test Case 10:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: b
Enter numerator: 18
Enter denominator: 0
Invalid, please input a number greater than 0.
Enter denominator:
```

Test Case 11:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: d
Enter side_a: 10
Enter side_b: 0
Invalid, please input a number greater than 0.
Enter side_b:
```

Test Case 12:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: a
How long should it be? 10
Should it include letters? (yes/no): apple
Invalid, please input 'yes' or 'no.
Should it include letters? (yes/no):
```

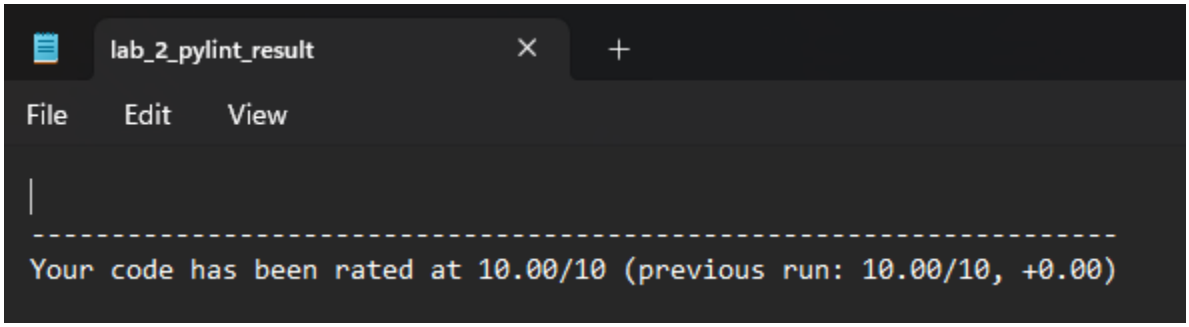
Test Case 13:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: a
How long should it be? 10
Should it include letters? (yes/no): n
Should it include punctuation? (yes/no): n
Should it include numbers? (yes/no): n
No character set chosen, please choose at least one.
How long should it be?
```

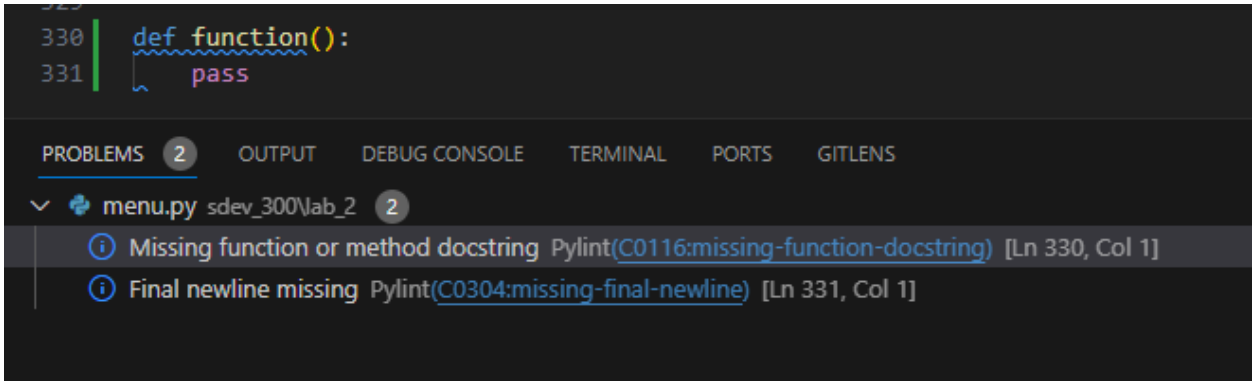
Test Case 14:

```
Menu:
a. Generate Secure Password
b. Calculate and Format a Percentage
c. How many days from today until July 4, 2025?
d. Use the Law of Cosines to calculate the leg of a triangle.
e. Calculate the volume of a Right Circular Cylinder
f. Exit program
Enter your choice: f
Thank you for using the program. Goodbye!
PS C:\Users\Terrence\Documents\UMGC\SDEV-300-building-Secure-Python-Applications>
```

Pylint



As I begin writing the skeleton of the program, Pylint tends to have a lot of issues to point out. For example:



Due to this, I prioritize developing my ideas over addressing linting errors. After my initial coding phase, I encountered one significant Pylint issue. Pylint permits up to 15 local variables, but my main function had a total of 19. I had set up main to gather user input and store it in local variables to pass to each function. To resolve this, I refactored the parameter collection process into a new function. This function consolidates all parameters into a single list, which is then passed as an argument to the requested function, significantly cutting down on local variables.