

Main Menu

Test Case 1:

Input validation

Requirements:

Must contain input validation.

Input:

Error Check, -1, 100, 6

Expected Output:

*** Invalid Selection ***

Actual Output:

*** Invalid Selection ***

```
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: Error Check
*** Invalid selection ***
Enter a selection: -1
*** Invalid selection ***
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
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5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 100
*** Invalid selection ***
0-----0
| Lab 2 Main Menu |
0-----0
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5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

Generate Secure Password

Test Case 1:

Generate a Secure Password

Requirements:

Prompt the user for the length of the password to be created

Use of Upper Case

Use of Lower Case

Use of Numbers

Use of Special Characters

Input:

1, 16, y, y, y, y, 6

Expected Output:

*** Generated Secure Password -> <password> ***

Actual Output:

*** Generated Secure Password -> `FGg3HJ<&.^(`z ***

```
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
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5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 1
0-----0
| Generate Secure Password |
0-----0
Enter password length: 16
Use of Upper Case? (Yes or No): y
Use of Lower Case? (Yes or No): y
Use of Numbers? (Yes or No): y
Use of Special Characters? (Yes or No): y
*** Generated Secure Password -> `FGg3HJ<&.^(`z ***
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

Test Case 2:

Input validation

Requirements:

Must contain input validation.

Input:

1, Error Check, -100, 100, 0, 16, Error Check, No, Error Check, No, Error Check, No, Error Check, No, 6

Expected Output:

*** Generated Secure Password -> You have selected NO to all items. Please try again. ***

Actual Output:

*** Generated Secure Password -> You have selected NO to all items. Please try again. ***

```
o-----o
| Lab 2 Main Menu |
o-----o
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 1
o-----o
| Generate Secure Password |
o-----o
Enter password length: Error Check
Please enter a number.
Enter password length: -100
Length must be greater than 0 and less than 64.
Enter password length: 100
Length must be greater than 0 and less than 64.
Enter password length: 0
Length must be greater than 0 and less than 64.
Enter password length: 16
Use of Upper Case? (Yes or No): Error Check
Enter a valid response.
Use of Upper Case? (Yes or No): No
Use of Lower Case? (Yes or No): Error Check
Enter a valid response.
Use of Lower Case? (Yes or No): No
Use of Numbers? (Yes or No): Error Check
Enter a valid response.
Use of Numbers? (Yes or No): No
Use of Special Characters? (Yes or No): Error Check
Enter a valid response.
Use of Special Characters? (Yes or No): No
*** Generated Secure Password -> You have selected NO to all items. Please try again. ***
o-----o
| Lab 2 Main Menu |
o-----o
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

Calculate and Format a Percentage

Test Case 1:

Calculate and Format a Percentage.

Requirements:

User enters numerator

User enters denominator

User enters the number of decimal points for formatting

Example: 22, 57, 3 would yield 38.596 %

Input:

2, 22, 57, 3 would yield 38.596 %

Expected Output:

*** Percentage = 38.596 ***

Actual Output:

*** Percentage = 38.596 ***

```
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 2
0-----0
| Calculate and Format a Percentage. |
0-----0
Enter the numerator: 22
Enter the denominator: 57
Enter the number of decimal points: 3
*** Percentage = 38.596 ***
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

Test Case 2:

Input validation

Requirements:

Must contain input validation.

Input:

2, Error Check, -100, 10, Error Check, -100, 88, Error Check, -100, 2, 6

Expected Output:

All invalid inputs are caught and handled.

Actual Output:

All invalid inputs are caught and handled.

```
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 2
0-----0
| Calculate and Format a Percentage. |
0-----0
Enter the numerator: Error Check
Please enter a number.
Enter the numerator: -100
Please enter a positive number.
Enter the numerator: 10
Enter the denominator: Error Check
Please enter a number.
Enter the denominator: -100
Please enter a positive number.
Enter the denominator: 88
Enter the number of decimal points: Error Check
Please enter a number.
Enter the number of decimal points: -100
Please enter a positive number.
Enter the number of decimal points: 2
*** Percentage = 11.36 ***
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
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3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

How many days from today until July 4, 2025?

Test Case 1:

Display the number of days between today (1/22/2022) and 7/4/2025.

Requirements:

Display the number of days between today and 7/4/2025.

Input:

3, 6

Expected Output:

*** Days = 1259 ***

Actual Output:

*** Days = 1259 ***

```
o-----o
| Lab 2 Main Menu |
o-----o
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 3
*** Days = 1259 ***
o-----o
| Lab 2 Main Menu |
o-----o
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

Use the Law of Cosines to calculate the leg of a triangle

Test Case 1:

Find C side

Requirements:

Use formula for the law of cosines

Input Side A, Side B and Angle C

Return Side C

Input:

4, 11, 8, 37, 6

Expected Output:

*** C = 6.67 ***

Actual Output:

*** C = 6.67 ***

```
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 4
0-----0
| Find the third side of the triangle using law of cosines. |
0-----0
Enter the length of side A: 11
Enter the length of side B: 8
Enter the angle of C: 37
*** C = 6.67 ***
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

Test Case 2:

Input validation

Requirements:

Must contain input validation.

Input:

4, Error Check, -100, 11, Error Check, -100, 8, Error Check, -100, 37, 6

Expected Output:

All invalid inputs are caught and handled.

Actual Output:

All invalid inputs are caught and handled.

```
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 4
0-----0
| Find the third side of the triangle using law of cosines. |
0-----0
Enter the length of side A: Error Check
Please enter a number.
Enter the length of side A: -100
Please enter a positive number.
Enter the length of side A: 11
Enter the length of side B: Error Check
Please enter a number.
Enter the length of side B: -100
Please enter a positive number.
Enter the length of side B: 8
Enter the angle of C: Error Check
Please enter a number.
Enter the angle of C: -100
Please enter a positive number.
Enter the angle of C: 37
*** C = 6.67 ***
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```


Calculate the volume of a Right Circular Cylinder

Test Case 1:

Calculate the volume of a Right Circular Cylinder

Requirements:

Input radius and height

Return volume

Input:

5, 2, 7, 6

Expected Output:

*** Volume = 87.965 ***

Actual Output:

*** Volume = 87.965 ***

```
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 5
0-----0
| Calculate the volume of a Right Circular Cylinder. |
0-----0
Enter the radius: 2
Enter the height: 7
*** Volume = 87.965 ***
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

Test Case 2:

Input validation

Requirements:

Must contain input validation.

Input:

5, Error Check, -100, 2, Error Check, -100, 7, 6

Expected Output:

All invalid inputs are caught and handled.

Actual Output:

All invalid inputs are caught and handled.

```
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 5
0-----0
| Calculate the volume of a Right Circular Cylinder. |
0-----0
Enter the radius: Error Check
Please enter a number.
Enter the radius: -100
Please enter a positive number.
Enter the radius: 2
Enter the height: Error Check
Please enter a number.
Enter the height: -100
Please enter a positive number.
Enter the height: 7
*** Volume = 87.965 ***
0-----0
| Lab 2 Main Menu |
0-----0
1 -- Generate Secure Password.
2 -- Calculate and Format a Percentage.
3 -- How many days from today until July 4, 2025?
4 -- Use the Law of Cosines to calculate the leg of a triangle.
5 -- Calculate the volume of a Right Circular Cylinder.
6 -- Exit
Enter a selection: 6
*** Exiting Program ***
```

Pylint Results

Comments:

I have too many branches in my program, but I think this is an acceptable error due to the nature of the program. User interfaces should have many choices (branches).

```
pylint.txt x
pylint.txt
1 ***** Module lab_2
2 lab_2.py:14:0: R0912: Too many branches (16/12) (too-many-branches)
3
4 -----
5 Your code has been rated at 9.95/10 (previous run: 9.90/10, +0.05)
6
7
```