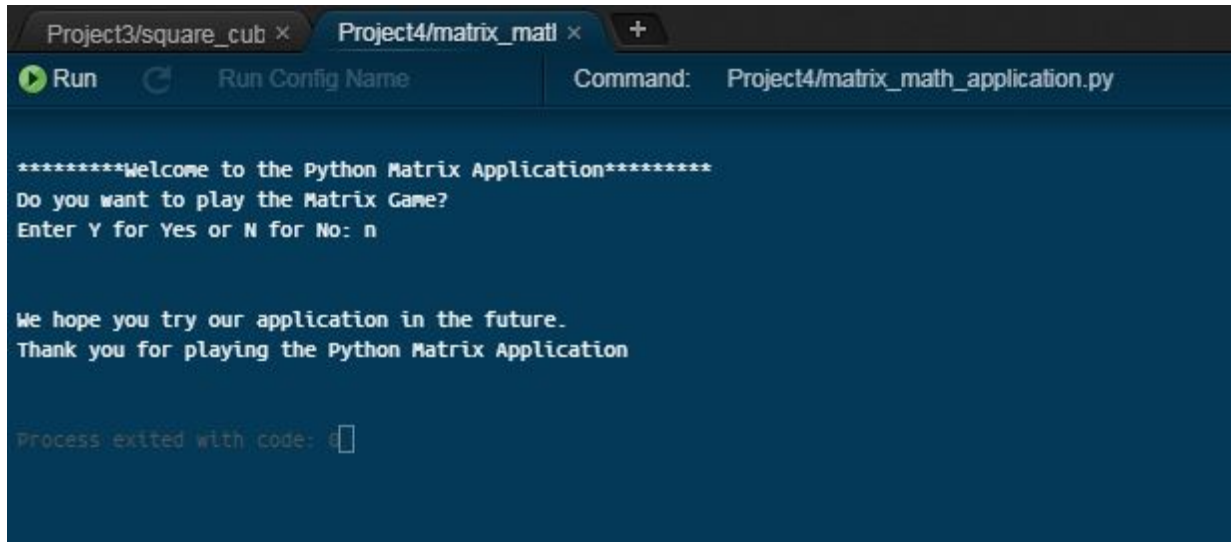


David Mejia
SDEV300
Project 4

TEST CASES FOR MATRIX_MATH_APPLICATION

A1. Test to see if selecting No terminates the program correctly



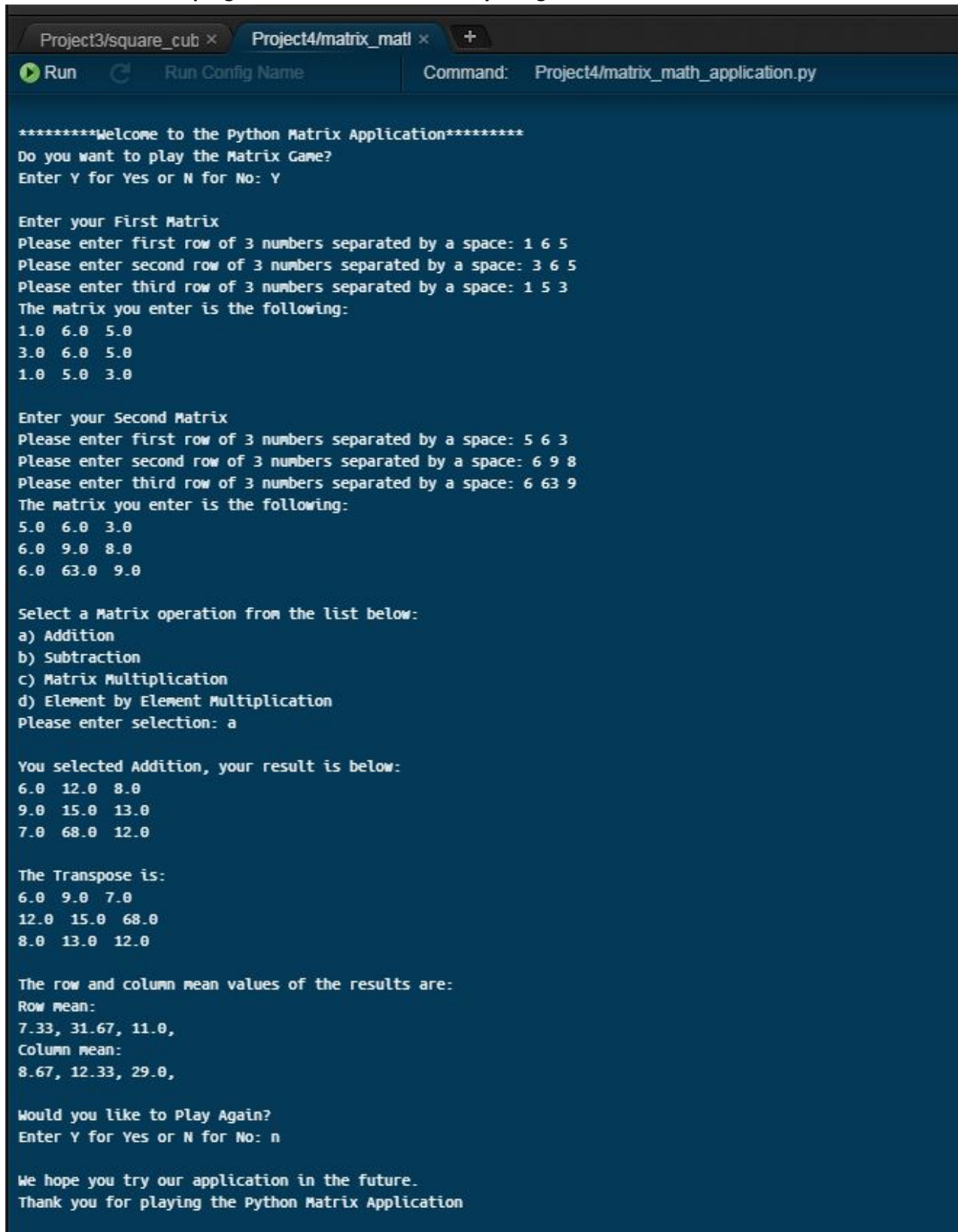
```
Project3/square_cub x Project4/matrix_math x +
Run Run Config Name Command: Project4/matrix_math_application.py

*****Welcome to the Python Matrix Application*****
Do you want to play the Matrix Game?
Enter Y for Yes or N for No: n

We hope you try our application in the future.
Thank you for playing the Python Matrix Application

Process exited with code: 0
```

A2. Test to see that program creates matrix correctly using Addition



```
Project3/square_cub x Project4/matrix_mati x +
Run Run Config Name Command: Project4/matrix_math_application.py

*****Welcome to the Python Matrix Application*****
Do you want to play the Matrix Game?
Enter Y for Yes or N for No: Y

Enter your First Matrix
Please enter first row of 3 numbers separated by a space: 1 6 5
Please enter second row of 3 numbers separated by a space: 3 6 5
Please enter third row of 3 numbers separated by a space: 1 5 3
The matrix you enter is the following:
1.0 6.0 5.0
3.0 6.0 5.0
1.0 5.0 3.0

Enter your Second Matrix
Please enter first row of 3 numbers separated by a space: 5 6 3
Please enter second row of 3 numbers separated by a space: 6 9 8
Please enter third row of 3 numbers separated by a space: 6 63 9
The matrix you enter is the following:
5.0 6.0 3.0
6.0 9.0 8.0
6.0 63.0 9.0

Select a Matrix operation from the list below:
a) Addition
b) Subtraction
c) Matrix Multiplication
d) Element by Element Multiplication
Please enter selection: a

You selected Addition, your result is below:
6.0 12.0 8.0
9.0 15.0 13.0
7.0 68.0 12.0

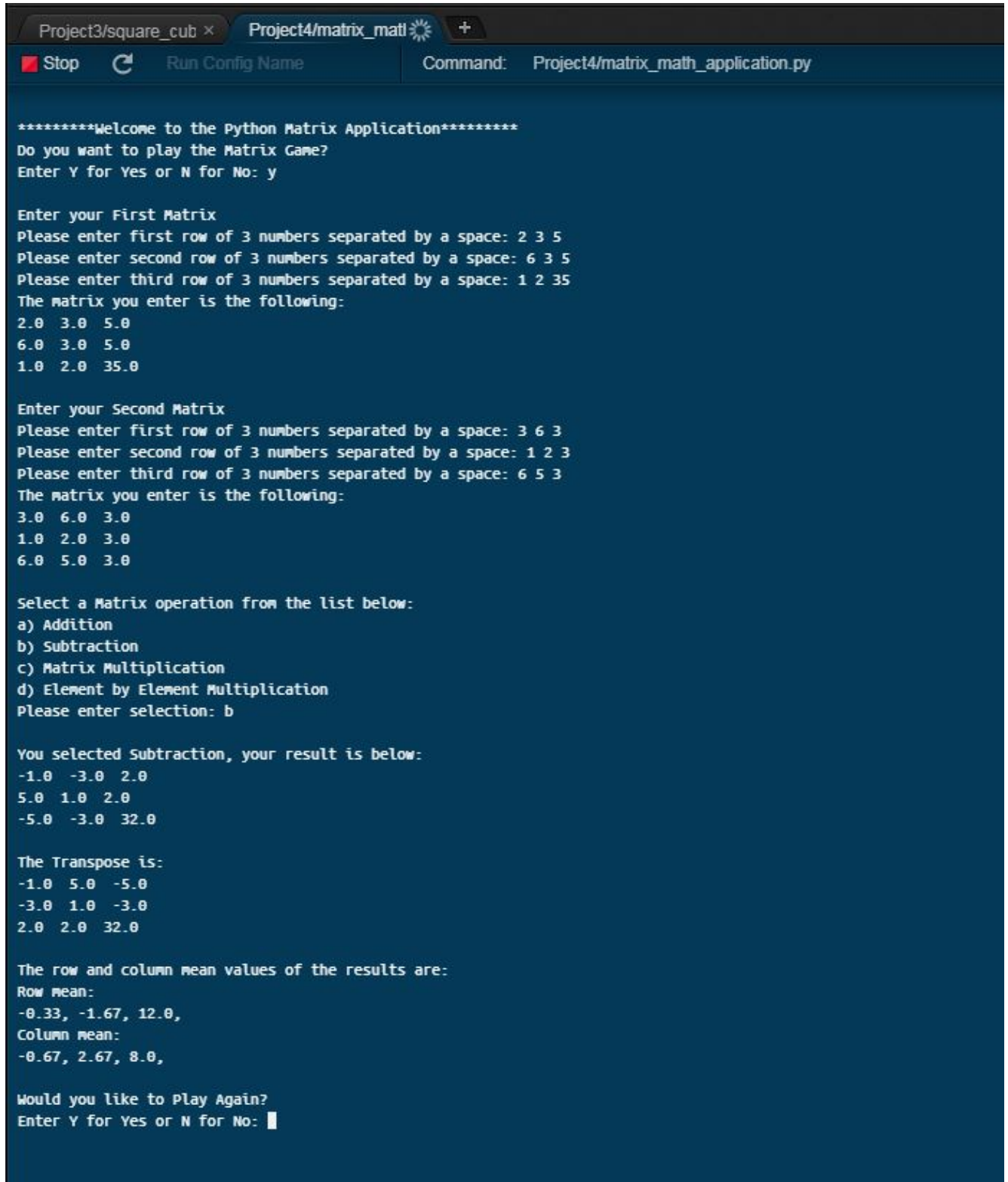
The Transpose is:
6.0 9.0 7.0
12.0 15.0 68.0
8.0 13.0 12.0

The row and column mean values of the results are:
Row mean:
7.33, 31.67, 11.0,
Column mean:
8.67, 12.33, 29.0,

Would you like to Play Again?
Enter Y for Yes or N for No: n

We hope you try our application in the future.
Thank you for playing the Python Matrix Application
```

A3. Test to check subtraction



The screenshot shows a Python IDE with two tabs: 'Project3/square_cub' and 'Project4/matrix_math'. The 'Project4/matrix_math' tab is active, displaying the output of a Python script. The script is a 'Python Matrix Application' that prompts the user to play a game. It asks for two 3x3 matrices, performs subtraction, and displays the result, transpose, and mean values. The user has entered 'y' for yes, and the first matrix is [[2, 3, 5], [6, 3, 5], [1, 2, 35]]. The second matrix is [[3, 6, 3], [1, 2, 3], [6, 5, 3]]. The selected operation is subtraction, resulting in [[-1, -3, 2], [5, 1, 2], [-5, -3, 32]]. The transpose of the result is [[-1, 5, -5], [-3, 1, -3], [2, 2, 32]]. The row mean is [-0.33, -1.67, 12.0] and the column mean is [-0.67, 2.67, 8.0]. The application asks if the user wants to play again.

```
Project3/square_cub x Project4/matrix_math +
Stop Run Config Name Command: Project4/matrix_math_application.py

*****Welcome to the Python Matrix Application*****
Do you want to play the Matrix Game?
Enter Y for Yes or N for No: y

Enter your First Matrix
Please enter first row of 3 numbers separated by a space: 2 3 5
Please enter second row of 3 numbers separated by a space: 6 3 5
Please enter third row of 3 numbers separated by a space: 1 2 35
The matrix you enter is the following:
2.0 3.0 5.0
6.0 3.0 5.0
1.0 2.0 35.0

Enter your Second Matrix
Please enter first row of 3 numbers separated by a space: 3 6 3
Please enter second row of 3 numbers separated by a space: 1 2 3
Please enter third row of 3 numbers separated by a space: 6 5 3
The matrix you enter is the following:
3.0 6.0 3.0
1.0 2.0 3.0
6.0 5.0 3.0

Select a Matrix operation from the list below:
a) Addition
b) Subtraction
c) Matrix Multiplication
d) Element by Element Multiplication
Please enter selection: b

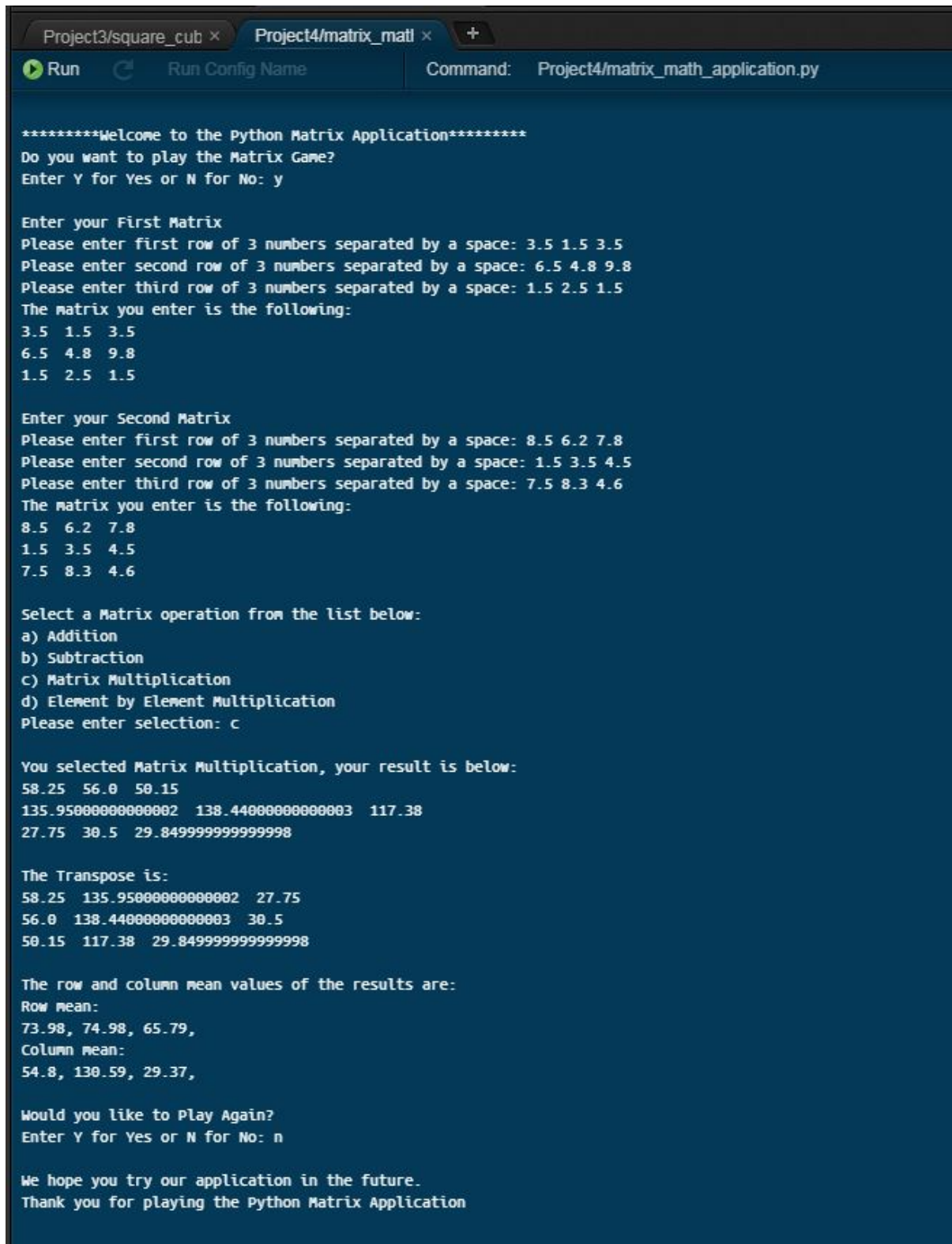
You selected Subtraction, your result is below:
-1.0 -3.0 2.0
5.0 1.0 2.0
-5.0 -3.0 32.0

The Transpose is:
-1.0 5.0 -5.0
-3.0 1.0 -3.0
2.0 2.0 32.0

The row and column mean values of the results are:
Row Mean:
-0.33, -1.67, 12.0,
Column Mean:
-0.67, 2.67, 8.0,

Would you like to Play Again?
Enter Y for Yes or N for No: 
```

A4. Test to check multiplication, will need to check decimal points



```
Project3/square_cub x Project4/matrix_matl x +
Run Run Config Name Command: Project4/matrix_math_application.py

*****Welcome to the Python Matrix Application*****
Do you want to play the Matrix Game?
Enter Y for Yes or N for No: y

Enter your First Matrix
Please enter first row of 3 numbers separated by a space: 3.5 1.5 3.5
Please enter second row of 3 numbers separated by a space: 6.5 4.8 9.8
Please enter third row of 3 numbers separated by a space: 1.5 2.5 1.5
The matrix you enter is the following:
3.5 1.5 3.5
6.5 4.8 9.8
1.5 2.5 1.5

Enter your Second Matrix
Please enter first row of 3 numbers separated by a space: 8.5 6.2 7.8
Please enter second row of 3 numbers separated by a space: 1.5 3.5 4.5
Please enter third row of 3 numbers separated by a space: 7.5 8.3 4.6
The matrix you enter is the following:
8.5 6.2 7.8
1.5 3.5 4.5
7.5 8.3 4.6

Select a Matrix operation from the list below:
a) Addition
b) Subtraction
c) Matrix Multiplication
d) Element by Element Multiplication
Please enter selection: c

You selected Matrix Multiplication, your result is below:
58.25 56.0 50.15
135.95000000000002 138.44000000000003 117.38
27.75 30.5 29.849999999999998

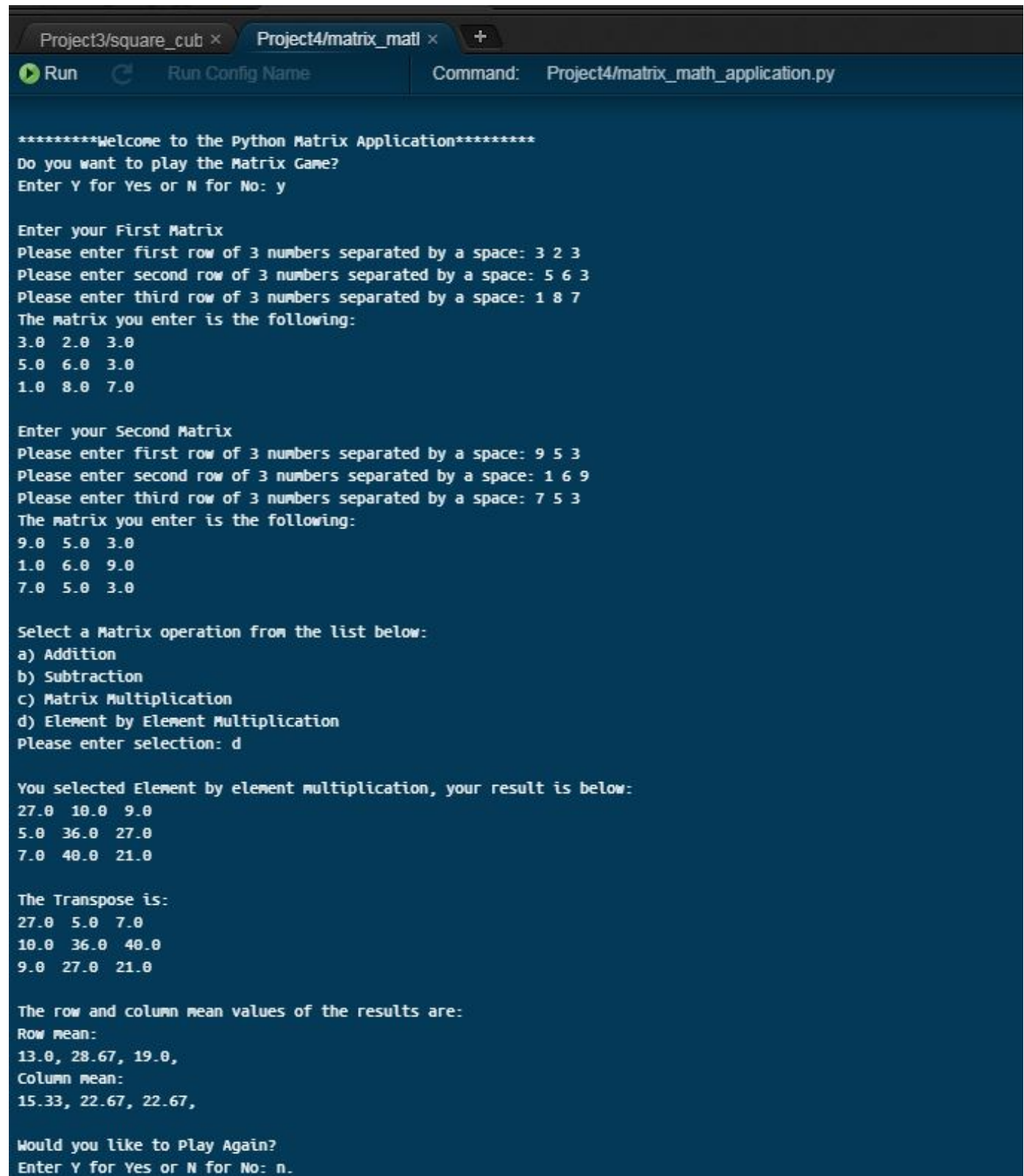
The Transpose is:
58.25 135.95000000000002 27.75
56.0 138.44000000000003 30.5
50.15 117.38 29.849999999999998

The row and column mean values of the results are:
Row mean:
73.98, 74.98, 65.79,
Column mean:
54.8, 130.59, 29.37,

Would you like to Play Again?
Enter Y for Yes or N for No: n

We hope you try our application in the future.
Thank you for playing the Python Matrix Application
```


A5. Test checks element by element multiplication



```
Project3/square_cub x Project4/matrix_matl x +
Run Run Config Name Command: Project4/matrix_math_application.py

*****Welcome to the Python Matrix Application*****
Do you want to play the Matrix Game?
Enter Y for Yes or N for No: y

Enter your First Matrix
Please enter first row of 3 numbers separated by a space: 3 2 3
Please enter second row of 3 numbers separated by a space: 5 6 3
Please enter third row of 3 numbers separated by a space: 1 8 7
The matrix you enter is the following:
3.0 2.0 3.0
5.0 6.0 3.0
1.0 8.0 7.0

Enter your Second Matrix
Please enter first row of 3 numbers separated by a space: 9 5 3
Please enter second row of 3 numbers separated by a space: 1 6 9
Please enter third row of 3 numbers separated by a space: 7 5 3
The matrix you enter is the following:
9.0 5.0 3.0
1.0 6.0 9.0
7.0 5.0 3.0

Select a Matrix operation from the list below:
a) Addition
b) Subtraction
c) Matrix Multiplication
d) Element by Element Multiplication
Please enter selection: d

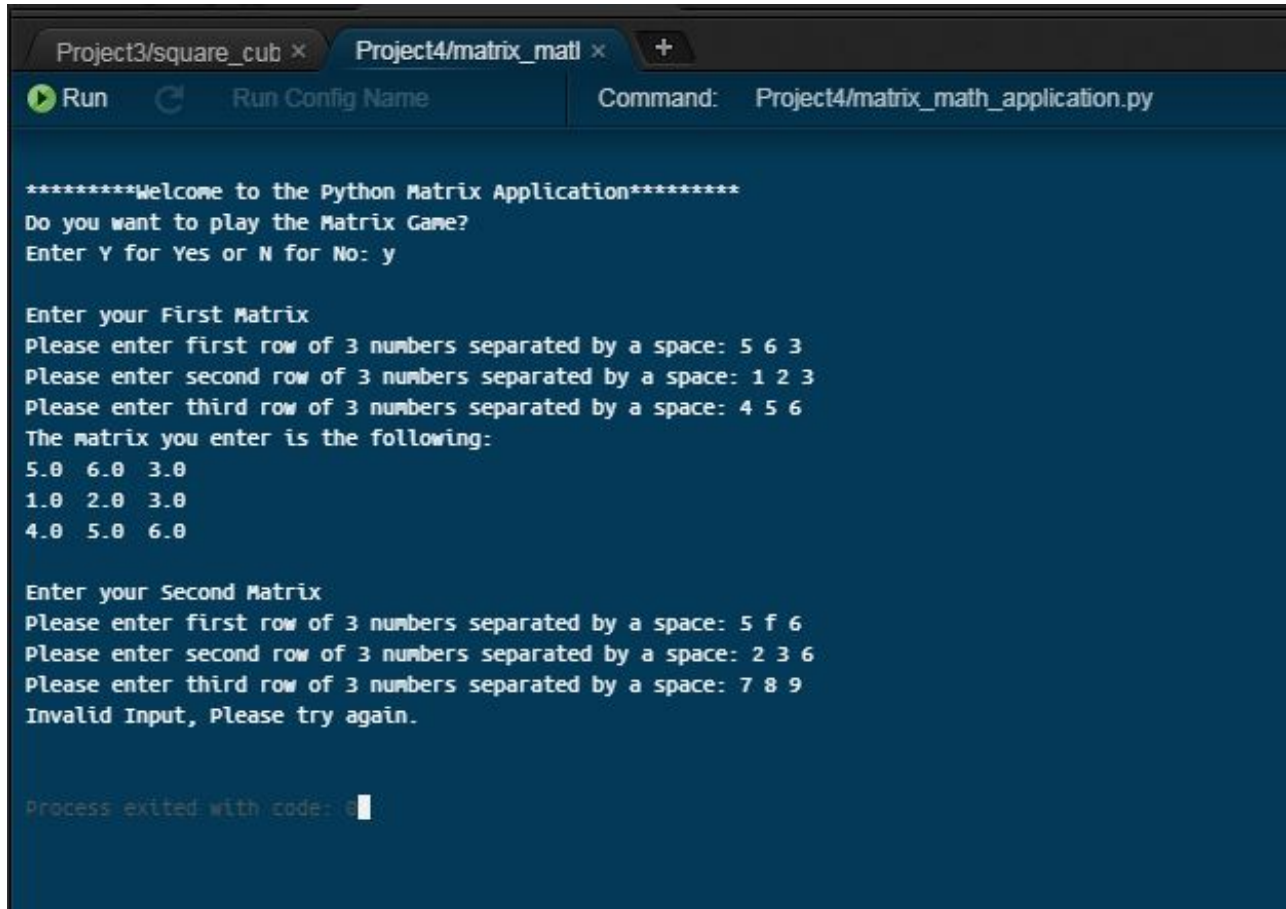
You selected Element by element multiplication, your result is below:
27.0 10.0 9.0
5.0 36.0 27.0
7.0 40.0 21.0

The Transpose is:
27.0 5.0 7.0
10.0 36.0 40.0
9.0 27.0 21.0

The row and column mean values of the results are:
Row mean:
13.0, 28.67, 19.0,
Column mean:
15.33, 22.67, 22.67,

Would you like to Play Again?
Enter Y for Yes or N for No: n.
```

A6. Test to see if program can detect nonnumeric characters in the matrix



The screenshot shows a Python IDE with two tabs: 'Project3/square_cub' and 'Project4/matrix_matl'. The 'Project4/matrix_matl' tab is active, showing a command prompt window. The command prompt displays the output of running 'Project4/matrix_math_application.py'. The program starts with a welcome message and asks if the user wants to play the Matrix Game. The user enters 'y'. The program then asks for the first matrix. The user enters three rows of three numbers each: '5 6 3', '1 2 3', and '4 5 6'. The program displays the matrix as a 3x3 grid of floats. Then, the program asks for the second matrix. The user enters three rows: '5 f 6', '2 3 6', and '7 8 9'. The program displays an error message: 'Invalid Input, Please try again.' The command prompt then shows 'Process exited with code: 0'.

```
Project3/square_cub x Project4/matrix_matl x +
Run Run Config Name Command: Project4/matrix_math_application.py

*****Welcome to the Python Matrix Application*****
Do you want to play the Matrix Game?
Enter Y for Yes or N for No: y

Enter your First Matrix
Please enter first row of 3 numbers separated by a space: 5 6 3
Please enter second row of 3 numbers separated by a space: 1 2 3
Please enter third row of 3 numbers separated by a space: 4 5 6
The matrix you enter is the following:
5.0 6.0 3.0
1.0 2.0 3.0
4.0 5.0 6.0

Enter your Second Matrix
Please enter first row of 3 numbers separated by a space: 5 f 6
Please enter second row of 3 numbers separated by a space: 2 3 6
Please enter third row of 3 numbers separated by a space: 7 8 9
Invalid Input, Please try again.

Process exited with code: 0
```

A7. Test to see if program can detect wrong selection in operation menu

```
Project4/data_mungi x Project4/matrix_math +
Stop Run Config Name Command: Project4/matrix_math_application.py

*****Welcome to the Python Matrix Application*****
Do you want to play the Matrix Game?
Enter Y for Yes or N for No: y

Enter your First Matrix
Please enter first row of 3 numbers separated by a space: 1 5 6
Please enter second row of 3 numbers separated by a space: 2 35 23
Please enter third row of 3 numbers separated by a space: 1 5 6
The matrix you enter is the following:
1.0 5.0 6.0
2.0 35.0 23.0
1.0 5.0 6.0

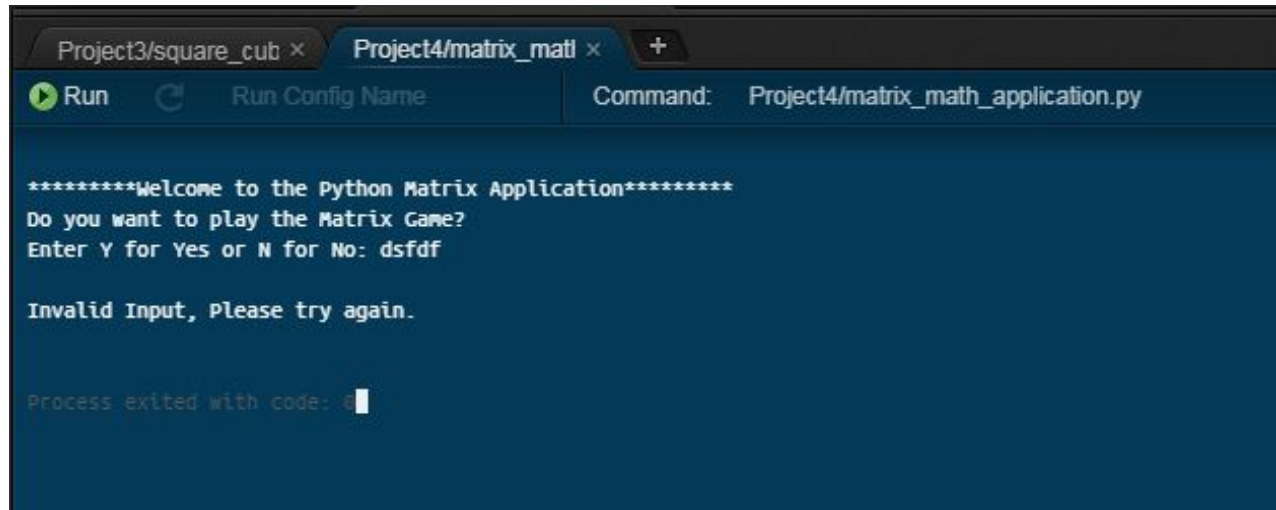
Enter your Second Matrix
Please enter first row of 3 numbers separated by a space: 1 8 3
Please enter second row of 3 numbers separated by a space: 1 6 3
Please enter third row of 3 numbers separated by a space: 1 6 8
The matrix you enter is the following:
1.0 8.0 3.0
1.0 6.0 3.0
1.0 6.0 8.0

Select a Matrix operation from the list below:
a) Addition
b) Subtraction
c) Matrix Multiplication
d) Element by Element Multiplication
Please enter selection: f
Wrong selection. f is not in the menu

Select a Matrix operation from the list below:
a) Addition
b) Subtraction
c) Matrix Multiplication
d) Element by Element Multiplication
Please enter selection: █
```

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SDEV300
Project 4

A8. Test will check if program can detect anything other than Y or N, and display correct error



```
Project3/square_cub x Project4/matrix_matl x +
Run Run Config Name Command: Project4/matrix_math_application.py

*****Welcome to the Python Matrix Application*****
Do you want to play the Matrix Game?
Enter Y for Yes or N for No: dsfdf

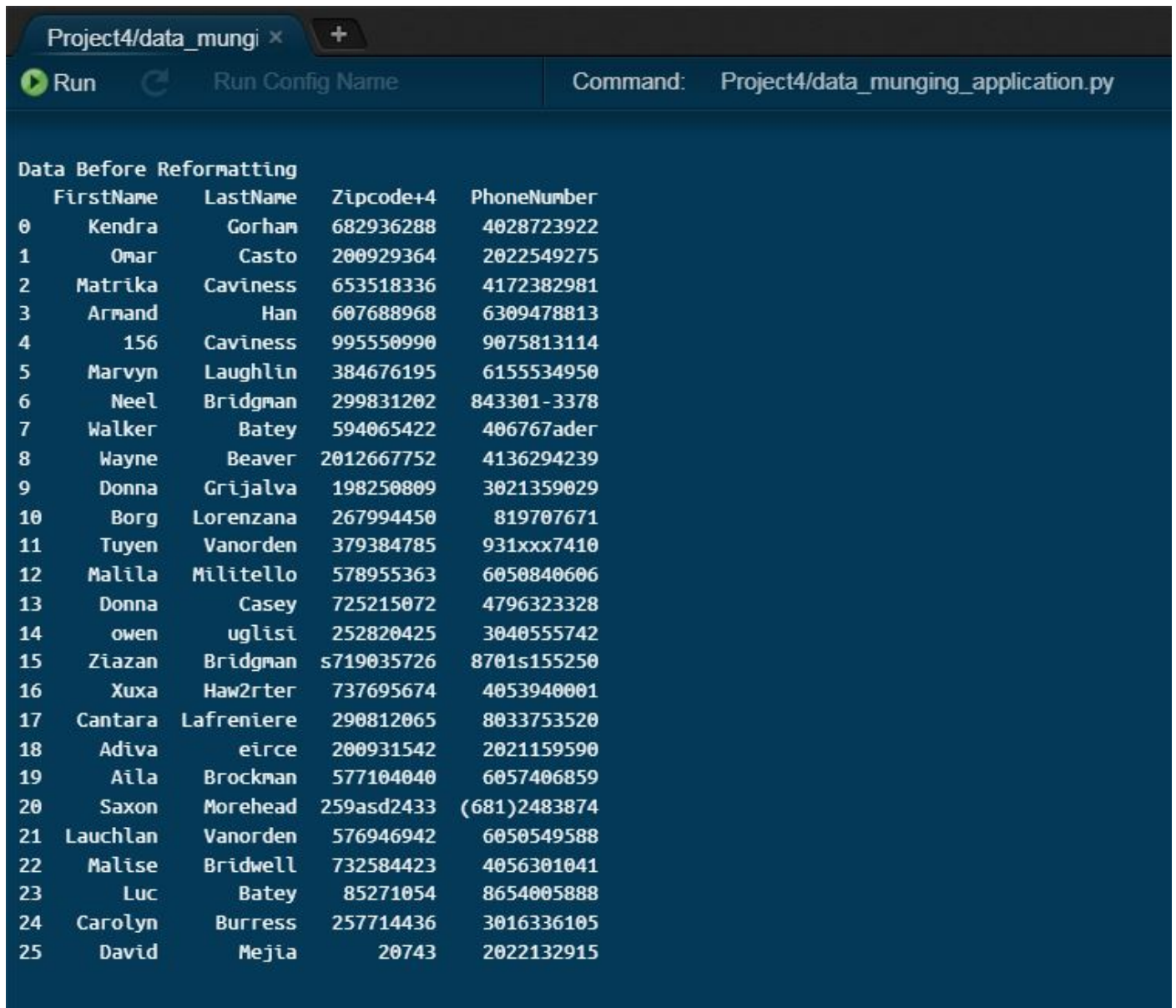
Invalid Input, Please try again.

Process exited with code: 0
```


TEST CASES FOR DATA_MUNGING_APPLICATION

Data Before Reformatting

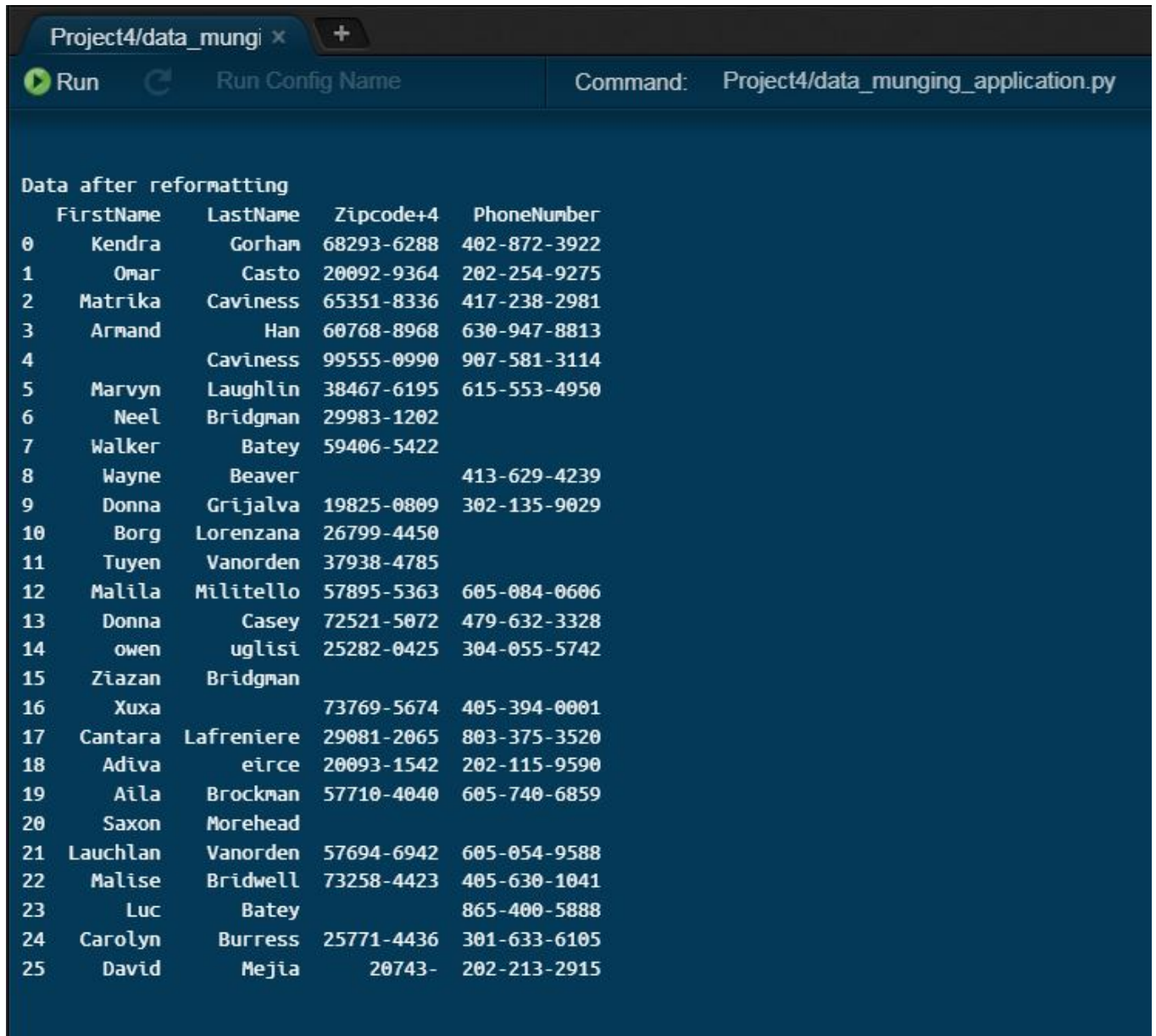
This is the information before any reformatting by the program, I have included numbers in names, longer zip codes and one 5-digit zip code. In addition, I have included different nonnumeric characters inside the phone number columns. All this was added to see if the program can detect incomplete or erroneous information.



	FirstName	LastName	Zipcode+4	PhoneNumber
0	Kendra	Gorham	682936288	4028723922
1	Omar	Casto	200929364	2022549275
2	Matrika	Caviness	653518336	4172382981
3	Armand	Han	607688968	6309478813
4	156	Caviness	995550990	9075813114
5	Marvyn	Laughlin	384676195	6155534950
6	Neel	Bridgman	299831202	843301-3378
7	Walker	Batey	594065422	406767ader
8	Wayne	Beaver	2012667752	4136294239
9	Donna	Grijalva	198250809	3021359029
10	Borg	Lorenzana	267994450	819707671
11	Tuyen	Vanorden	379384785	931xxx7410
12	Malila	Militello	578955363	6050840606
13	Donna	Casey	725215072	4796323328
14	owen	uglisi	252820425	3040555742
15	Ziazan	Bridgman	s719035726	8701s155250
16	Xuxa	Haw2rter	737695674	4053940001
17	Cantara	Lafreniere	290812065	8033753520
18	Adiva	eirce	200931542	2021159590
19	Aila	Brockman	577104040	6057406859
20	Saxon	Morehead	259asd2433	(681)2483874
21	Lauchlan	Vanorden	576946942	6050549588
22	Malise	Bridwell	732584423	4056301041
23	Luc	Batey	85271054	8654005888
24	Carolyn	Burrress	257714436	3016336105
25	David	Mejia	20743	2022132915

Data After Reformatting

After running the program this is the resulting information. The data that did not follow the rules stabilised inside the program were dumped and replaced by an empty string.



	FirstName	LastName	Zipcode+4	PhoneNumber
0	Kendra	Gorham	68293-6288	402-872-3922
1	Omar	Casto	20092-9364	202-254-9275
2	Matrika	Caviness	65351-8336	417-238-2981
3	Armand	Han	60768-8968	630-947-8813
4		Caviness	99555-0990	907-581-3114
5	Marvyn	Laughlin	38467-6195	615-553-4950
6	Neel	Bridgman	29983-1202	
7	Walker	Batey	59406-5422	
8	Wayne	Beaver		413-629-4239
9	Donna	Grijalva	19825-0809	302-135-9029
10	Borg	Lorenzana	26799-4450	
11	Tuyen	Vanorden	37938-4785	
12	Malila	Militello	57895-5363	605-084-0606
13	Donna	Casey	72521-5072	479-632-3328
14	owen	uglisi	25282-0425	304-055-5742
15	Ziazan	Bridgman		
16	Xuxa		73769-5674	405-394-0001
17	Cantara	Lafreniere	29081-2065	803-375-3520
18	Adiva	eirce	20093-1542	202-115-9590
19	Aila	Brockman	57710-4040	605-740-6859
20	Saxon	Morehead		
21	Lauchlan	Vanorden	57694-6942	605-054-9588
22	Malise	Bridwell	73258-4423	405-630-1041
23	Luc	Batey		865-400-5888
24	Carolyn	Burress	25771-4436	301-633-6105
25	David	Mejia	20743-	202-213-2915