Neural Network & Deep Learning (Task 1)

TEAM_ID = CS_H17

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GENERAL NOTES BEFORE READING AND TEST OUR CODE OR DOCUMENTATION

- **We handled all of the user's input such as :1) if user choose the same feature twice in textboxes then error message is showing and return from program . 2) If the user leaves the box empty .**

- **we assumed and encoded in preprocessing phase that Adelie class is 1 and Gentoo class is 0 and Chinstrap class is -1 , but we handled it in training and test because MUST be 1 or -1 only (means comparison between two classes only)**

- **First thing is showed if you run the code is 10 figures (Visualization Before training data) you must close all of 10 figures first then GUI page will show .**

- **In visualization Phase after training and test we tried more than once with a different Epochs and eta .**
- **The whole code in main.py**
- **preproc.py is file for preprocessing only and creation new csv file**

- **Preprocessing** :

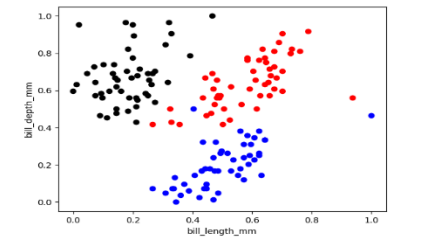
  - Filling the NA in the gender column .
  - Normalize the numerical data between 0 and 1.
  - create a new CSV file with an updated version.

- **Visualization** :

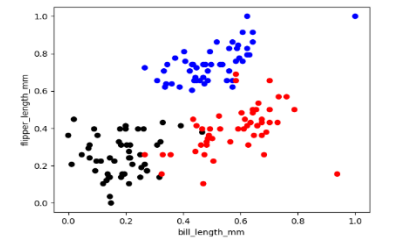
Red : Adelie Class .

Blue : Gentoo Class .

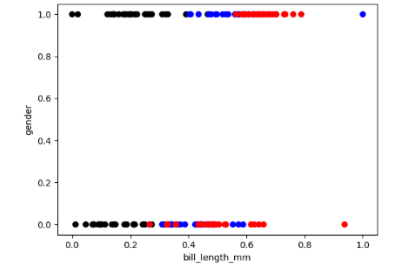
Black : Chinstrap Class .



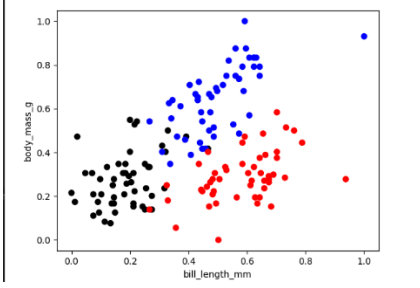
1-Bill depth and Bill length:



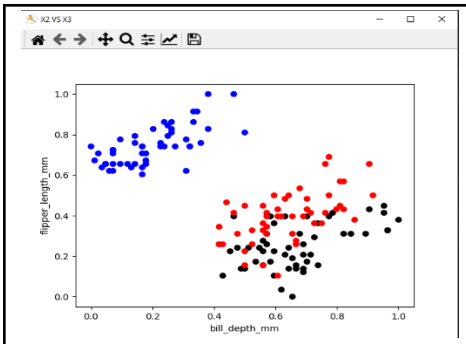
2- Bill length and flipper length:



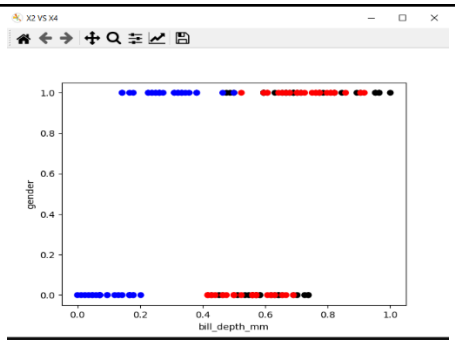
3- Bill length and gender :



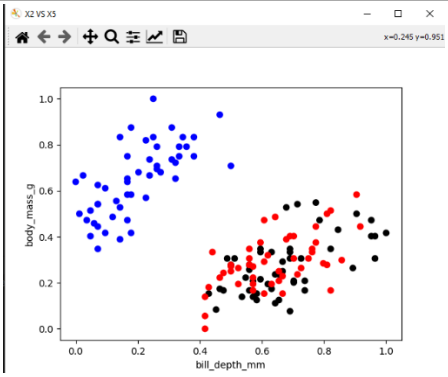
4- Bill length and body mass:



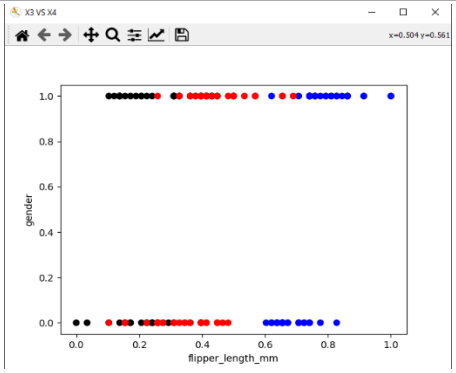
5- Bill depth and flipper length:



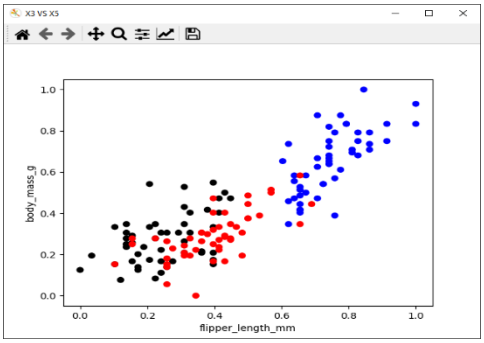
6- Bill depth and gender:



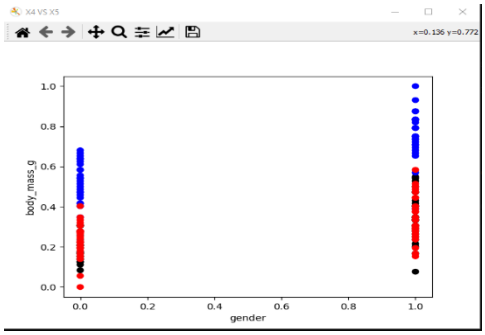
7- Bill depth and body mass:



8-Flipper length and gender:



9 Flipper length and body mass:

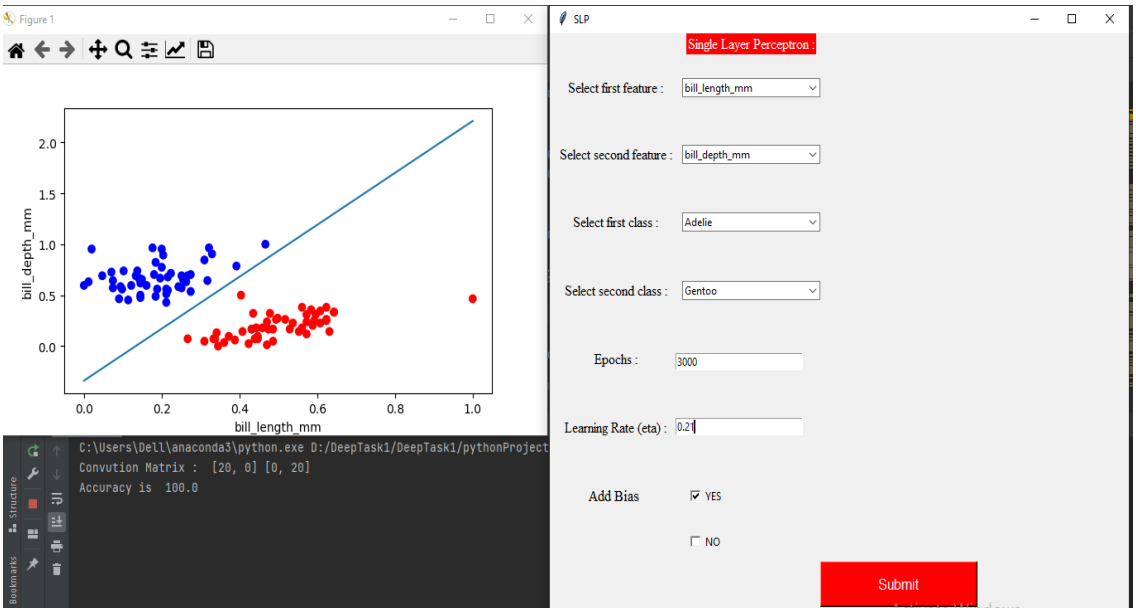
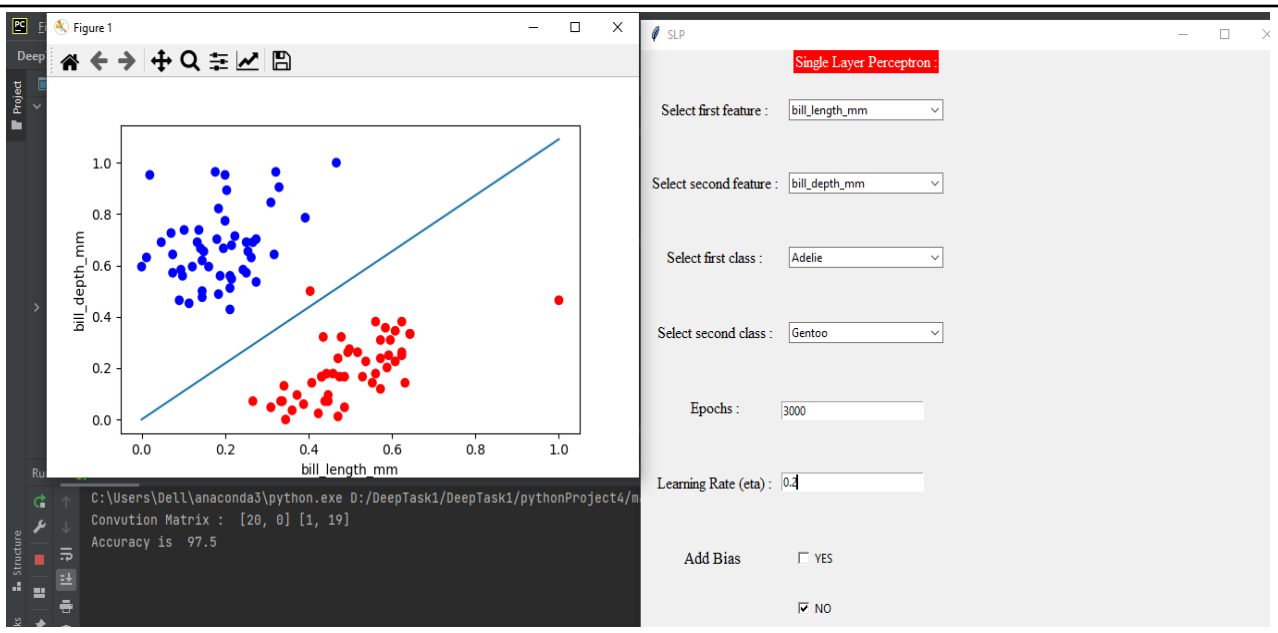


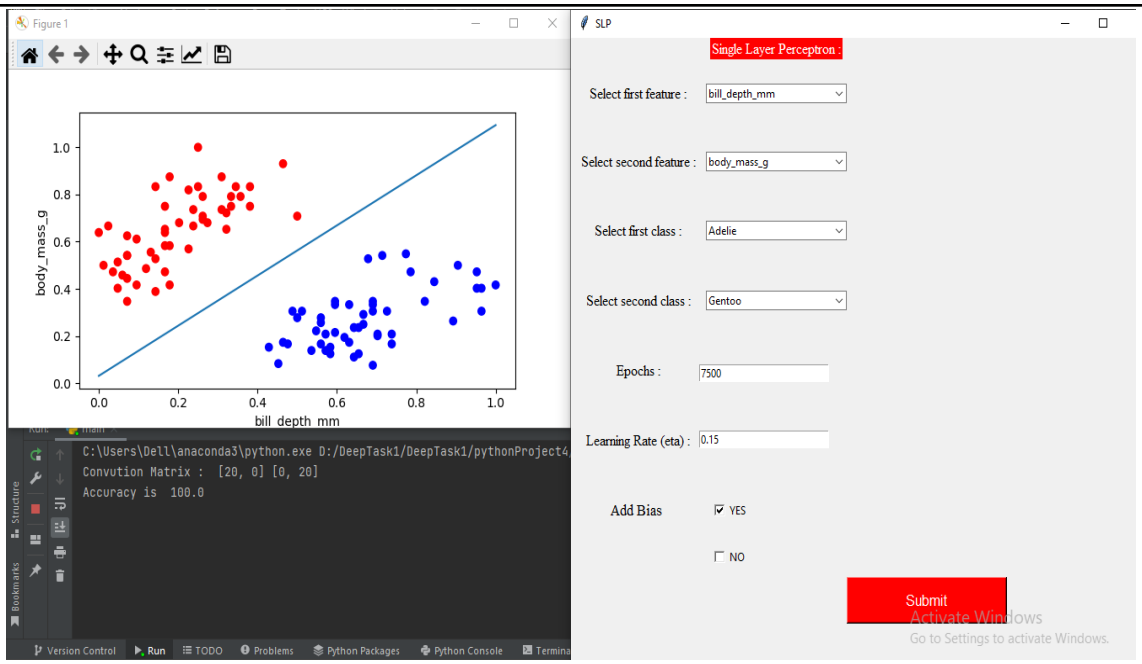
10- Gender and body mass:

Analysis:

1. Gender feature can’t discriminate between classes.
2. Bill depth and Bill length discriminate between classes clearly.
3. Flipper and body mass discriminate between classes.

- Visualization (After Draw Line) :

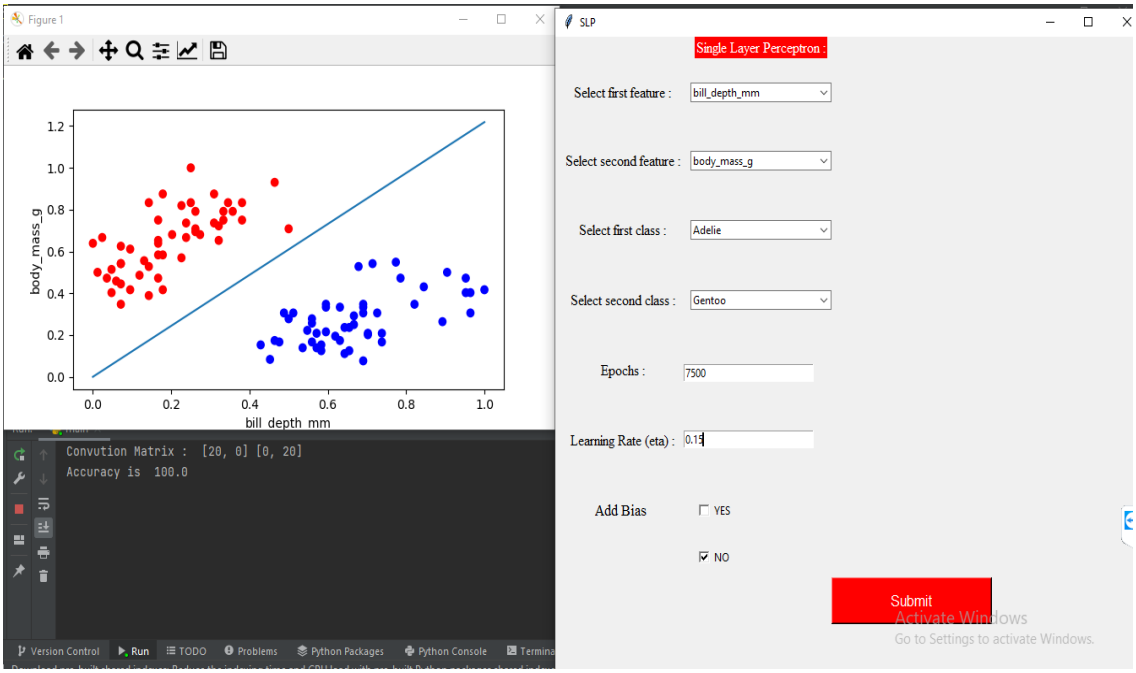
	Accuracy: with bias : 100%
	Accuracy: without bias : 97.5%



Accuracy:

with bias

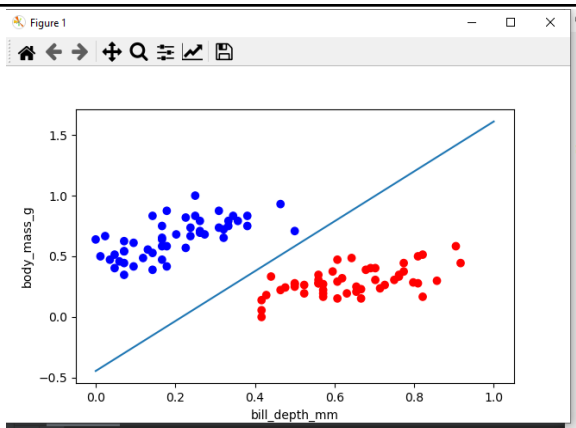
:100%

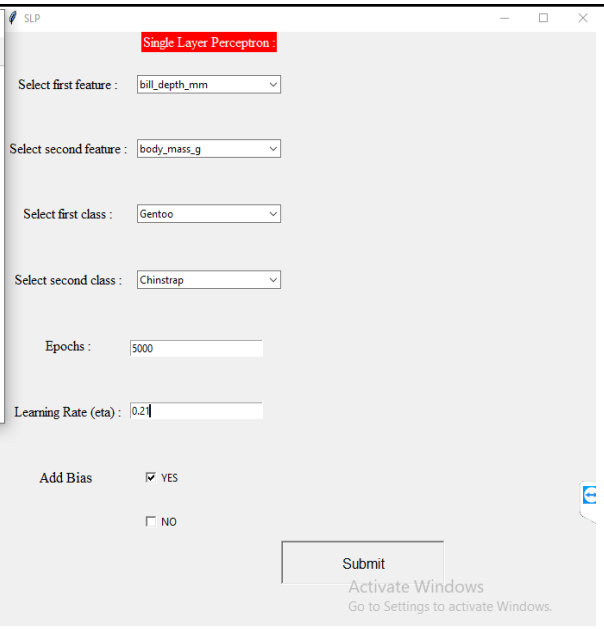


Accuracy:

without bias

: 100%

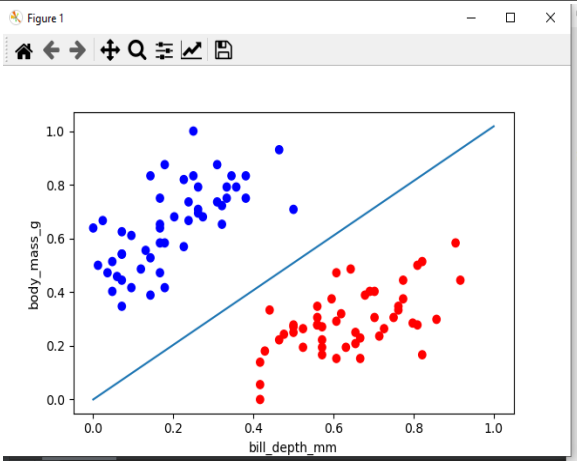


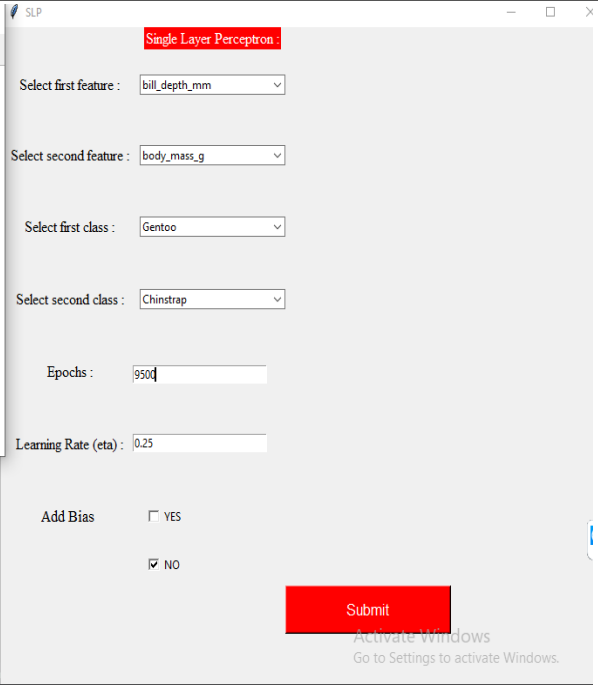


Accuracy:

with bias

: 100%

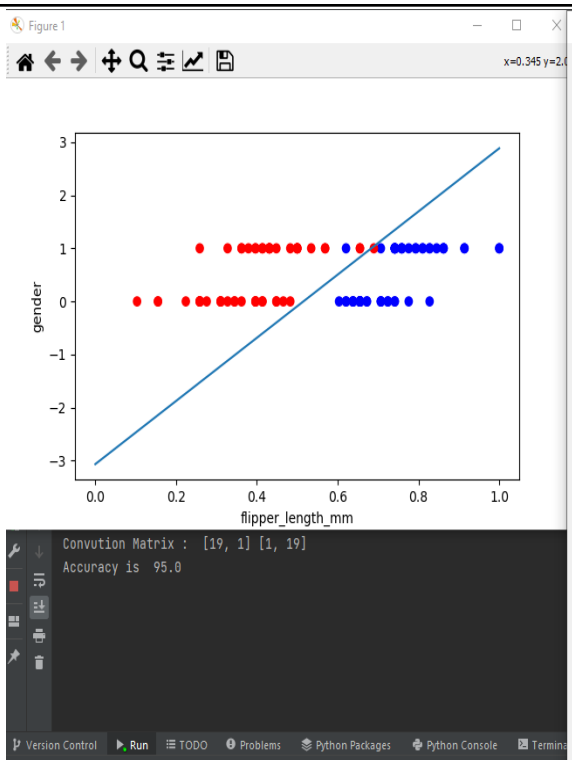


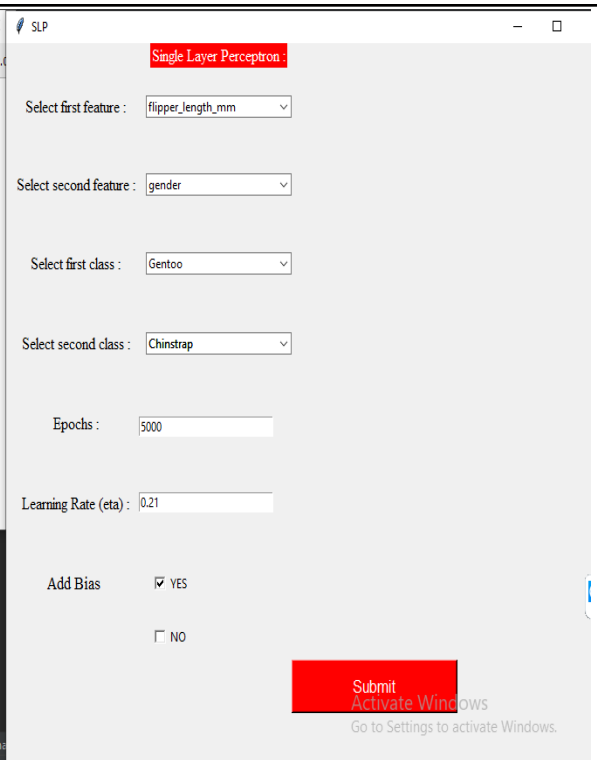


Accuracy:

without bias

: 100%

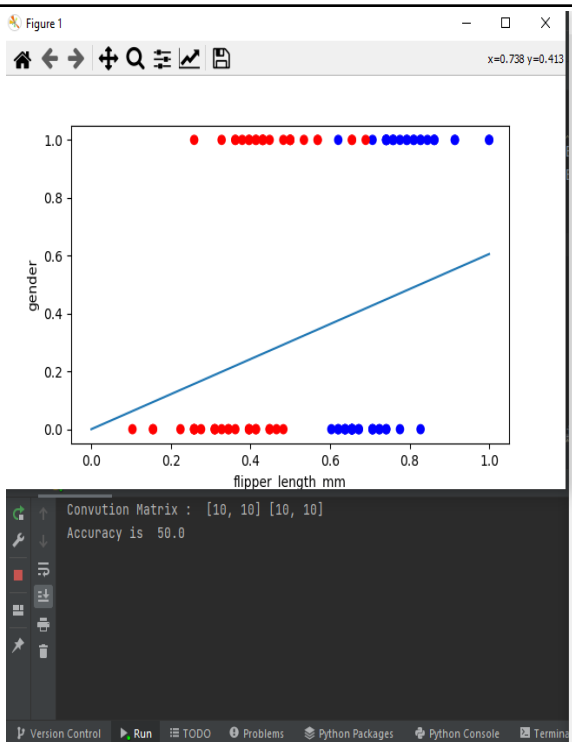


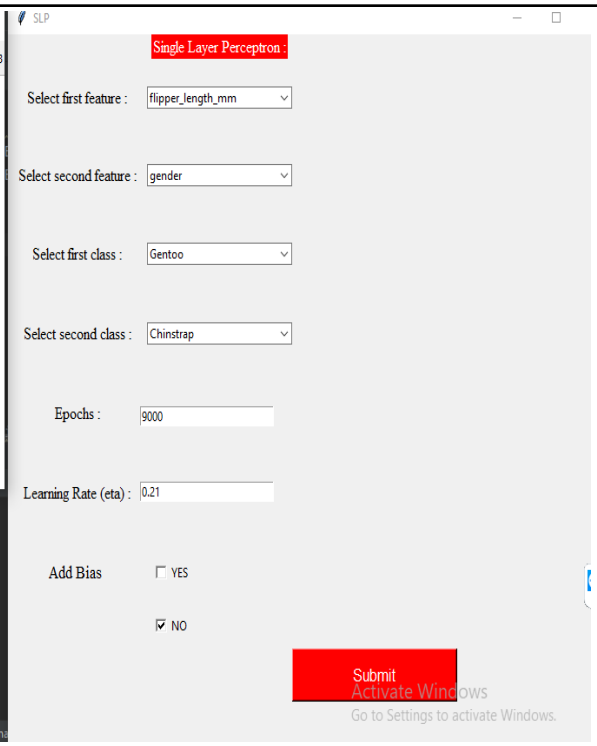


Accuracy:

with bias

:95%

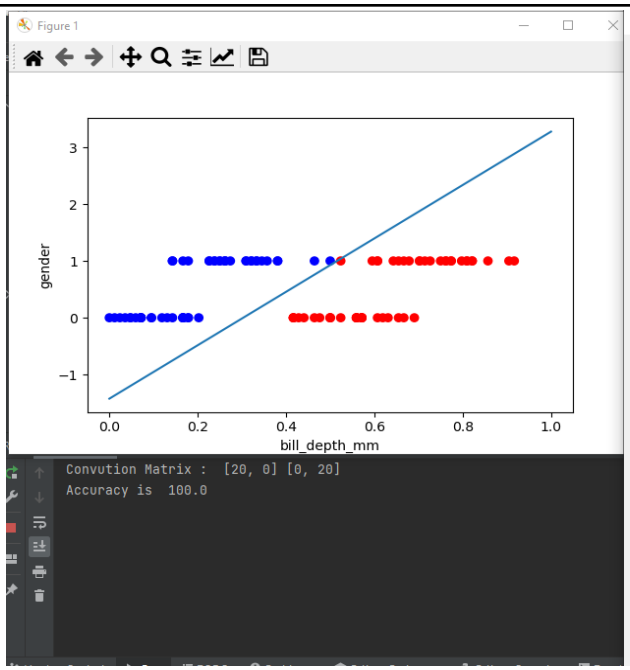


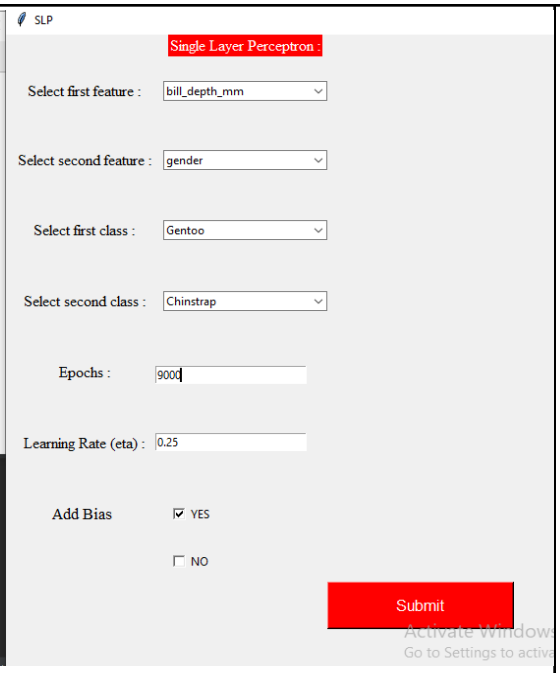


Accuracy:

without bias

: 50%

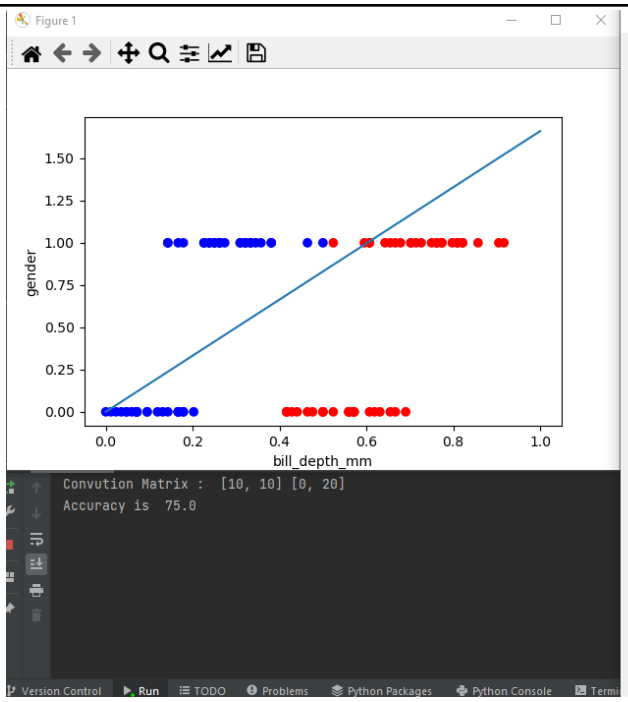


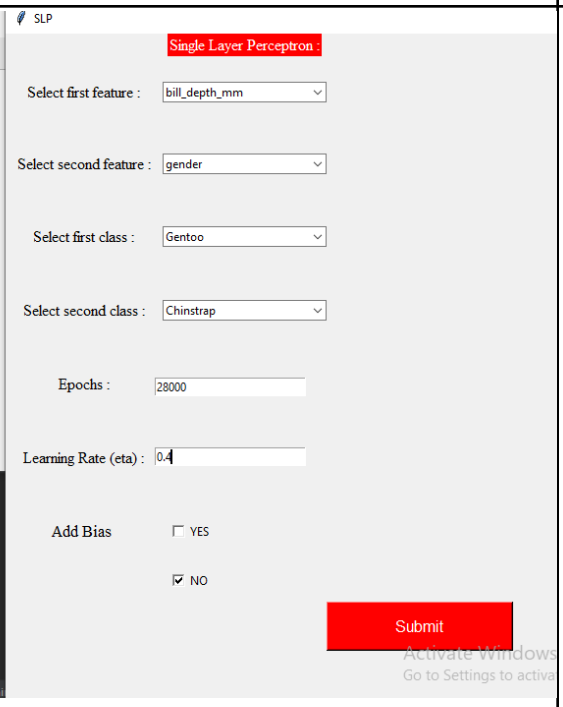


Accuracy:

with bias

: 100%

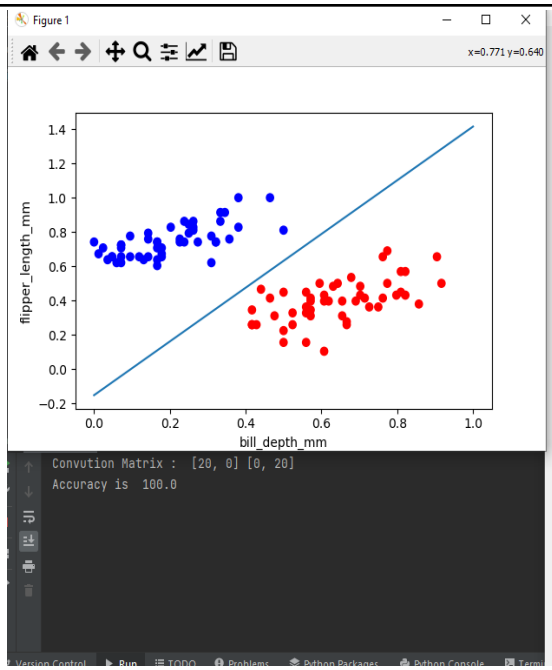


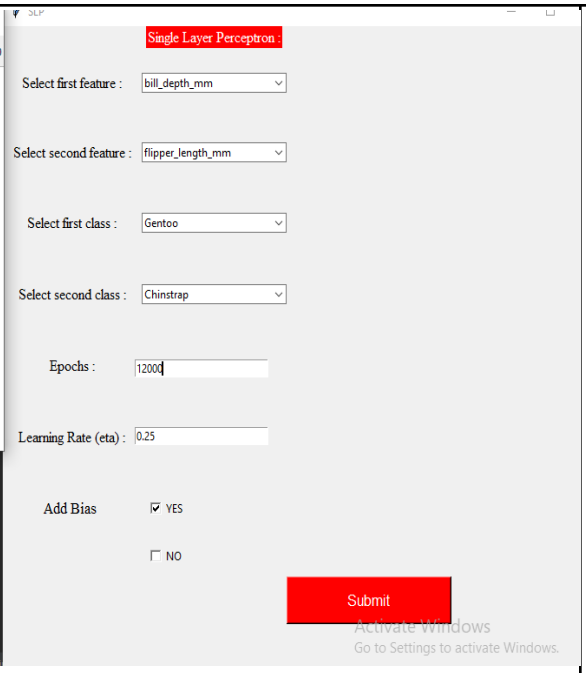


Accuracy:

without bias

: 75%

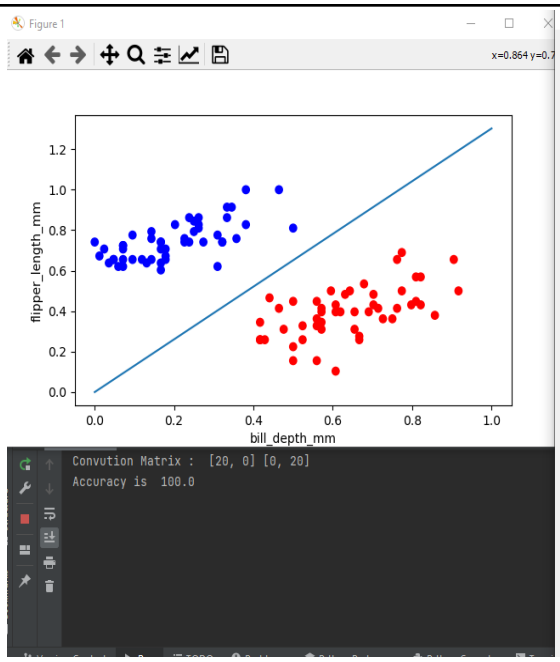


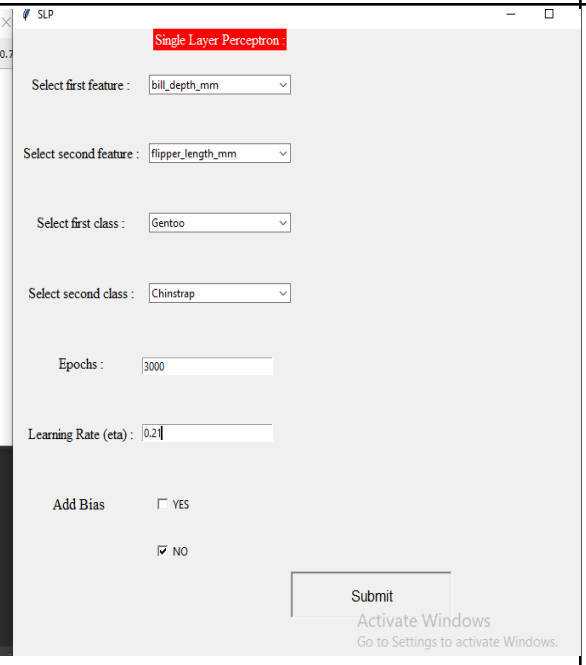


Accuracy:

with bias

: 100%

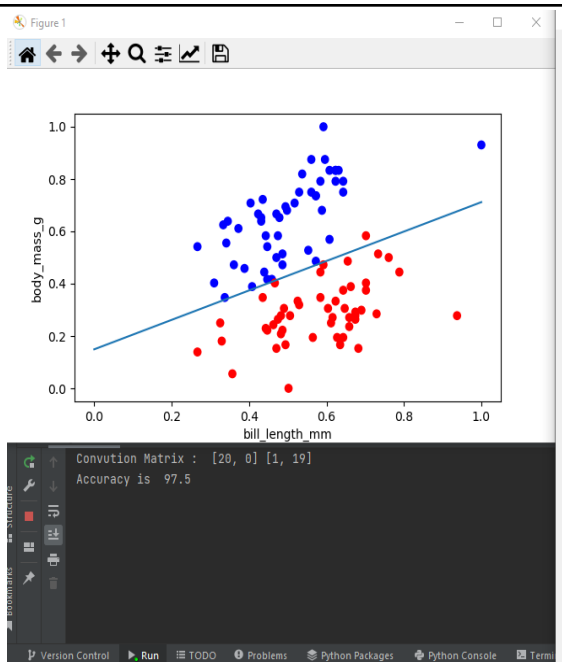


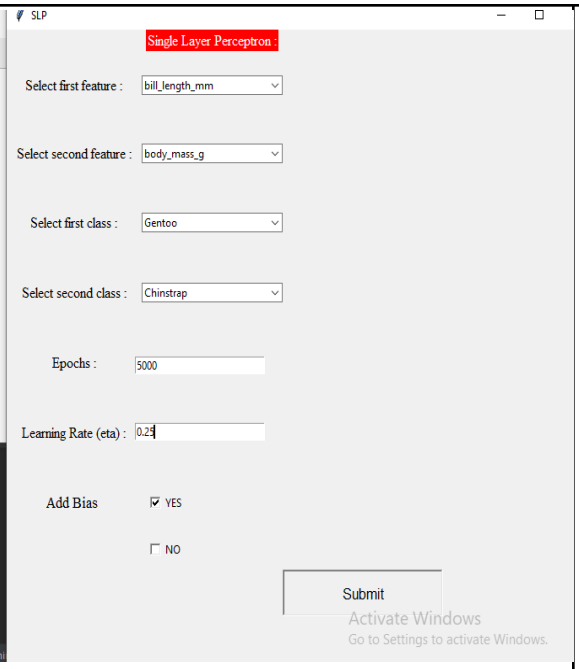


Accuracy:

without bias

: 100%

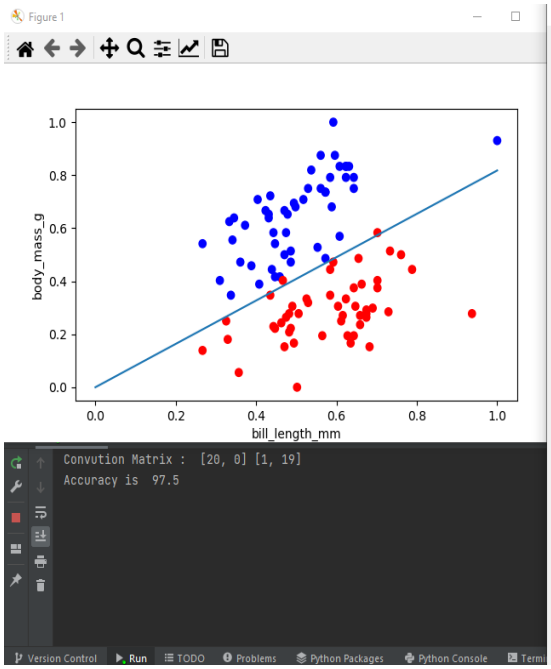


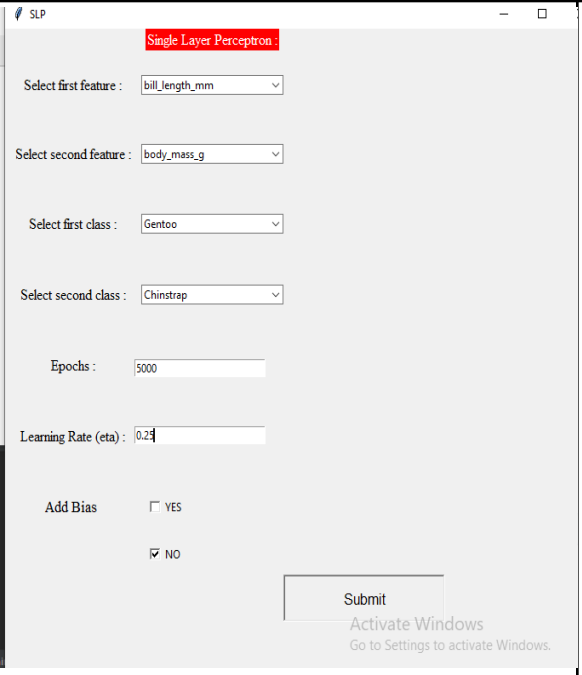


Accuracy:

with bias

: 97.5%

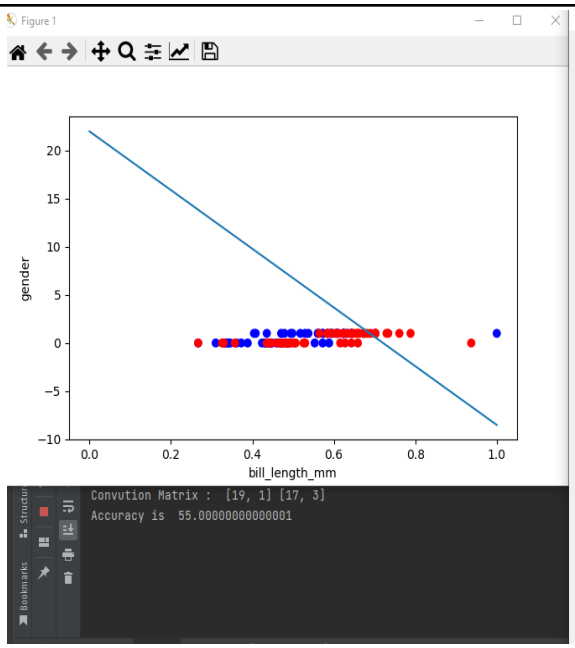


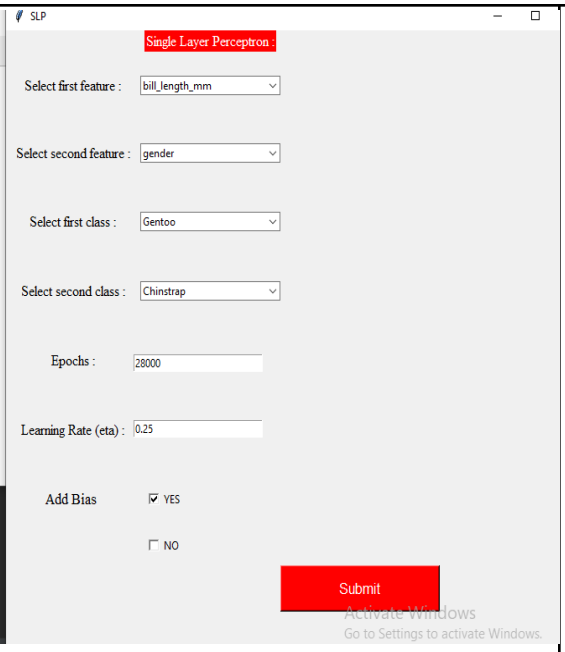


Accuracy:

without bias

:97.5%

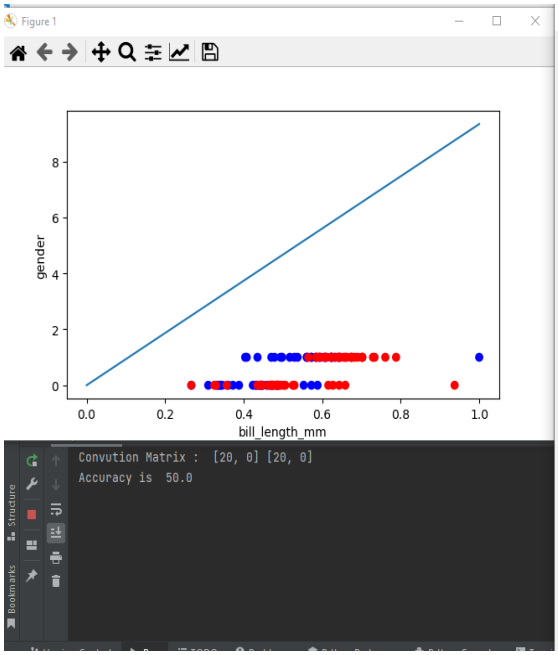


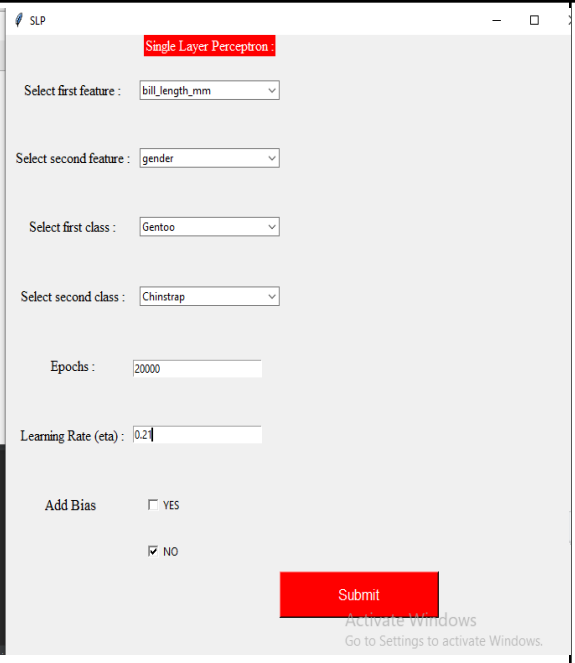


Accuracy:

with bias

: 55%

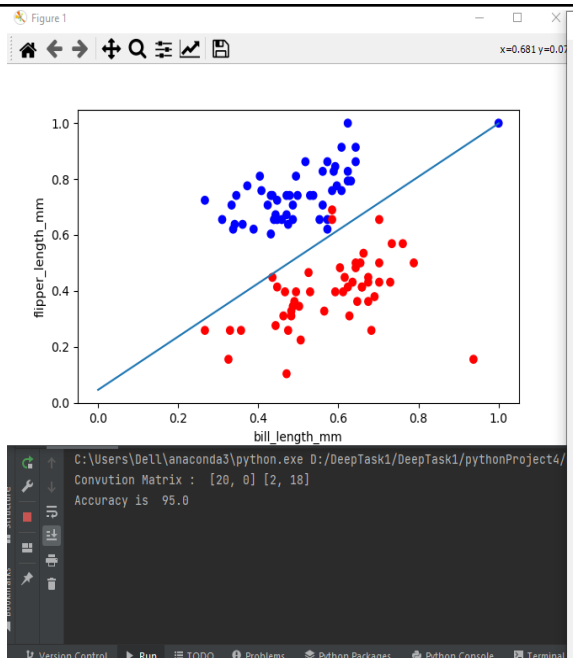


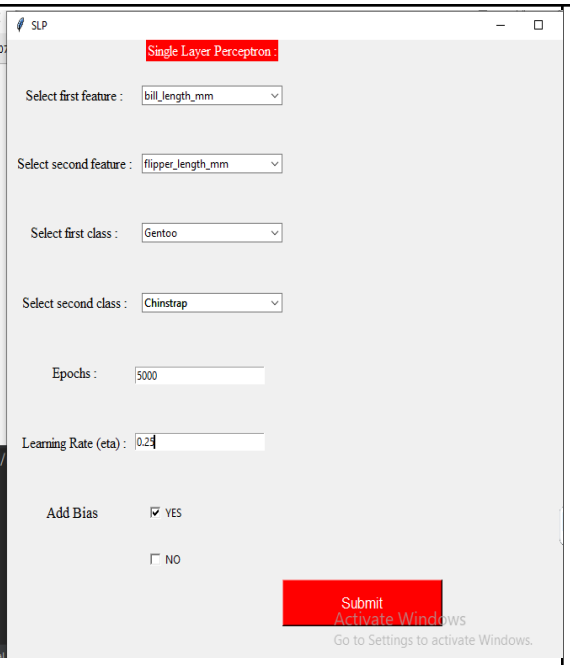


Accuracy:

without bias

: 50%

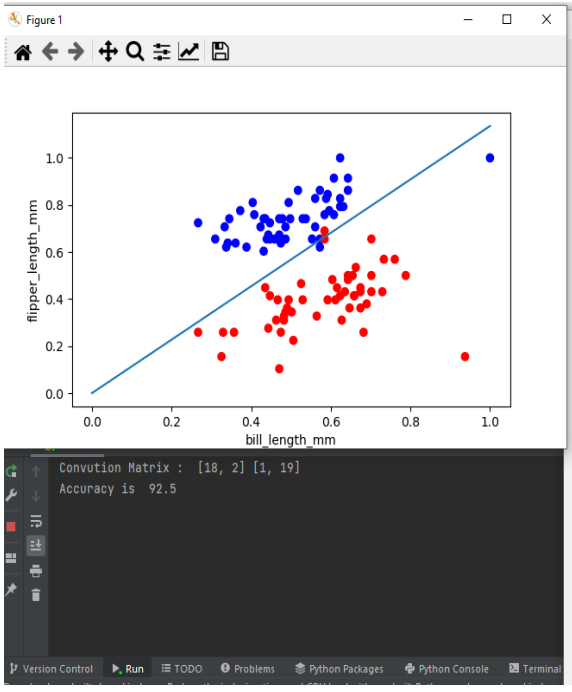


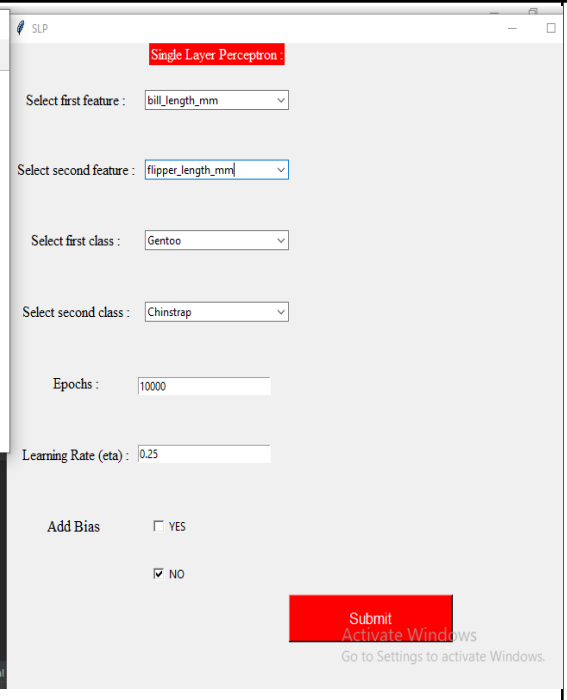


Accuracy:

with bias

: 95%

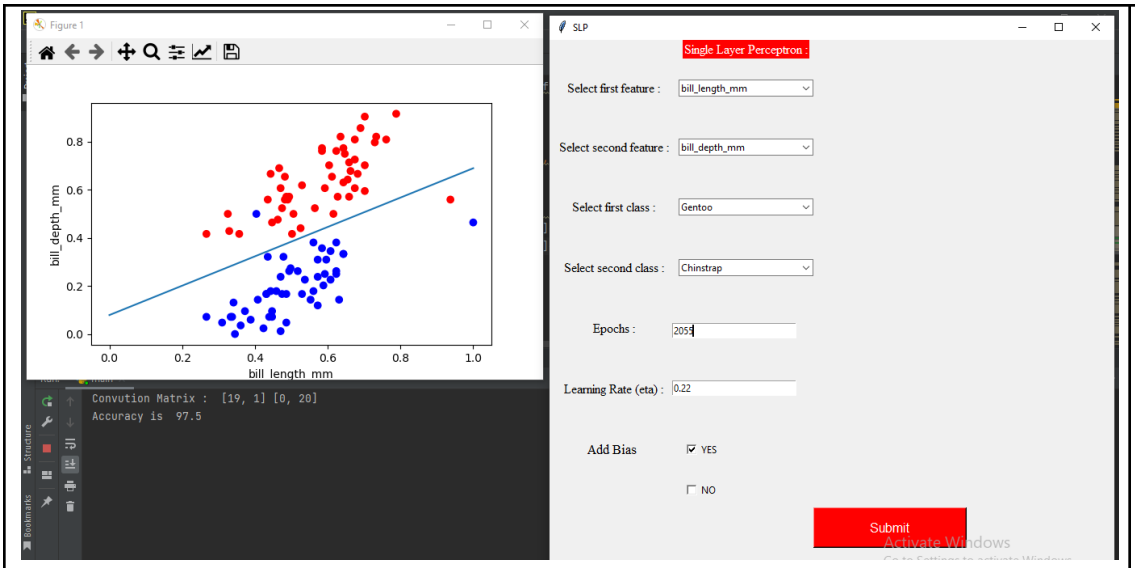




Accuracy:

without bias

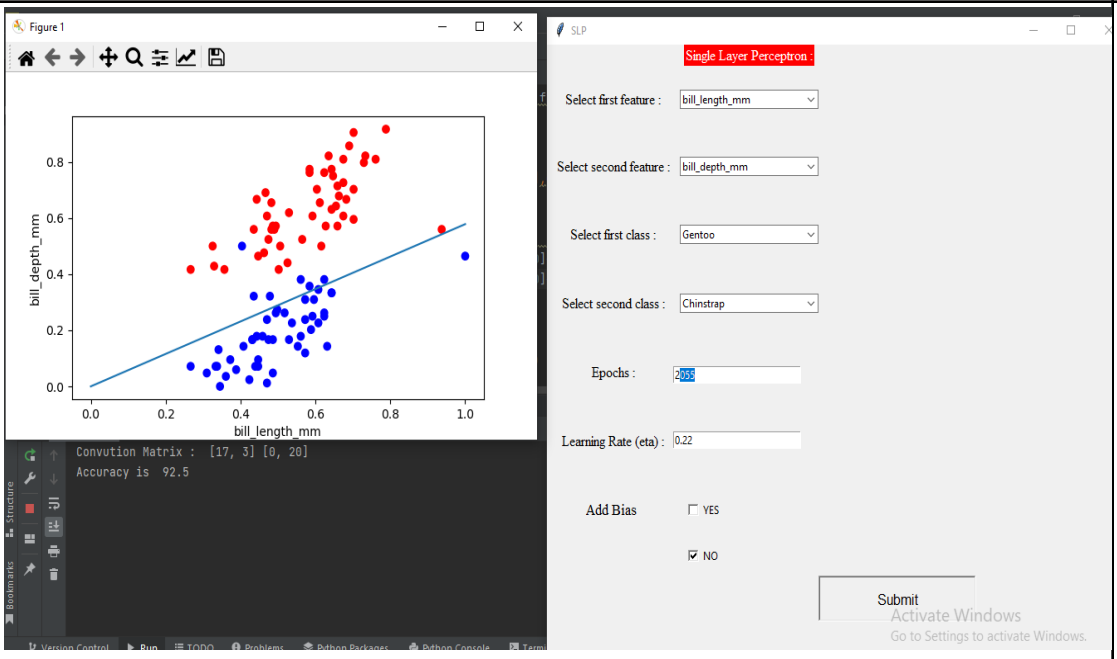
: 92.5%



Accuracy:

with bias

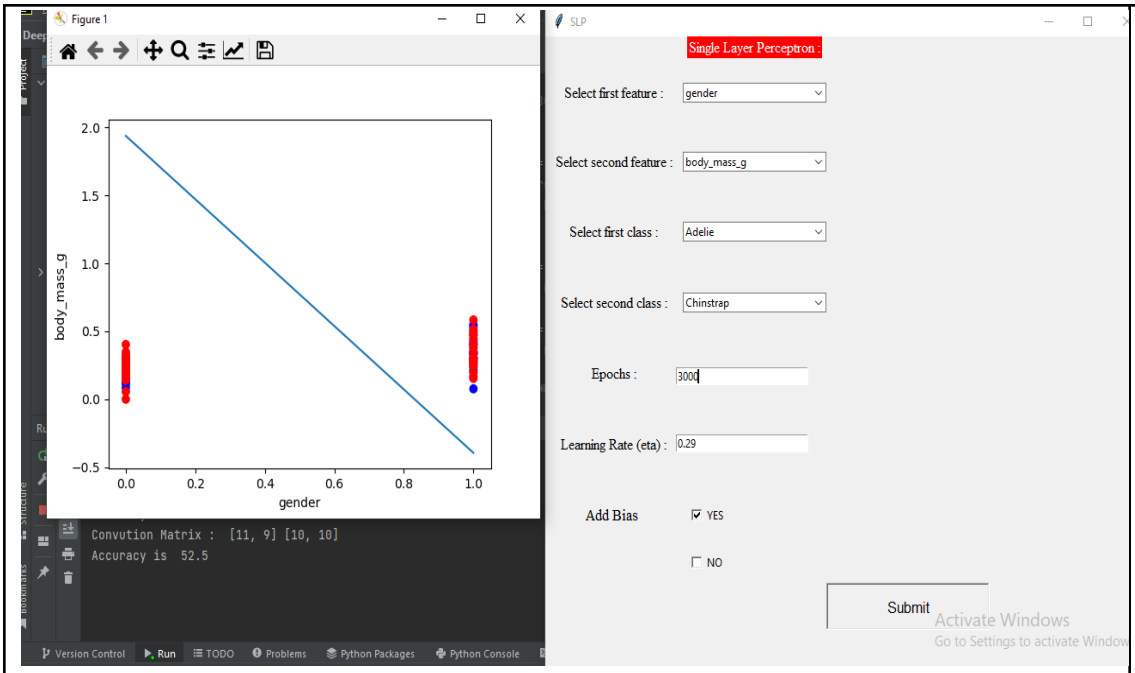
: 97.5%



Accuracy:

without bias

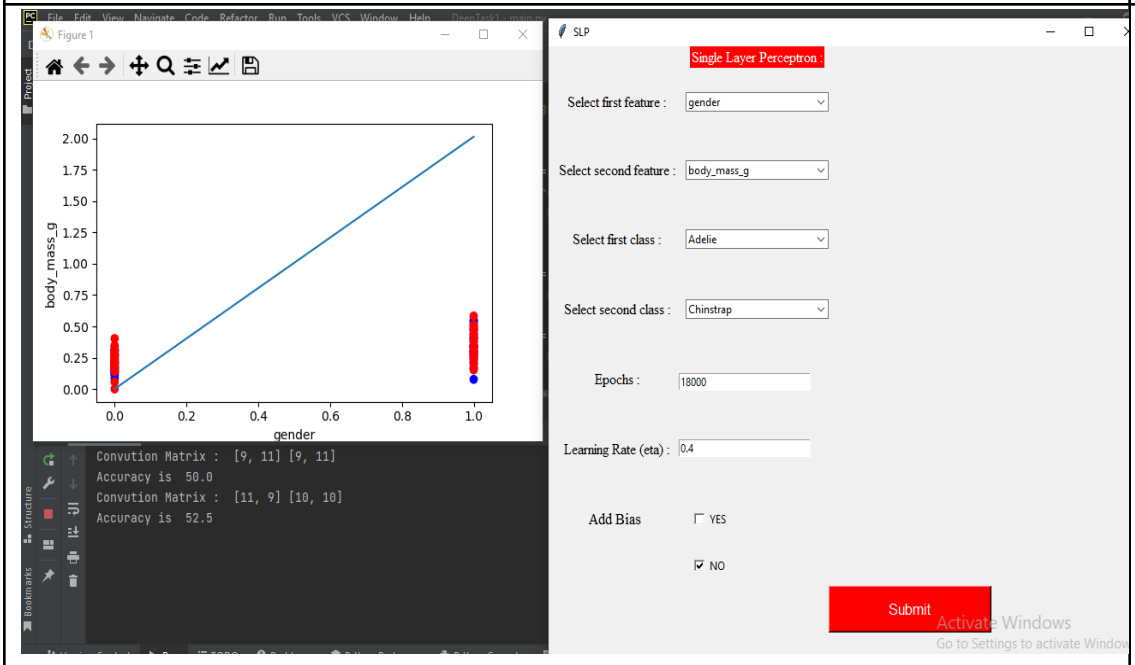
: 92.5%



Accuracy:

with bias

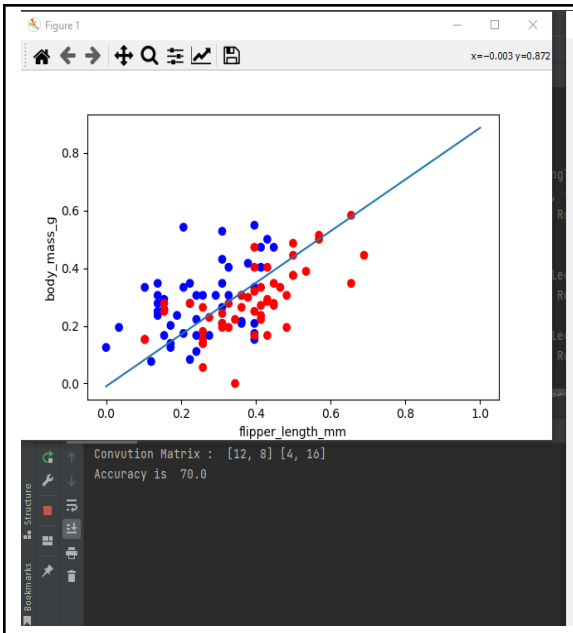
: 52.5%

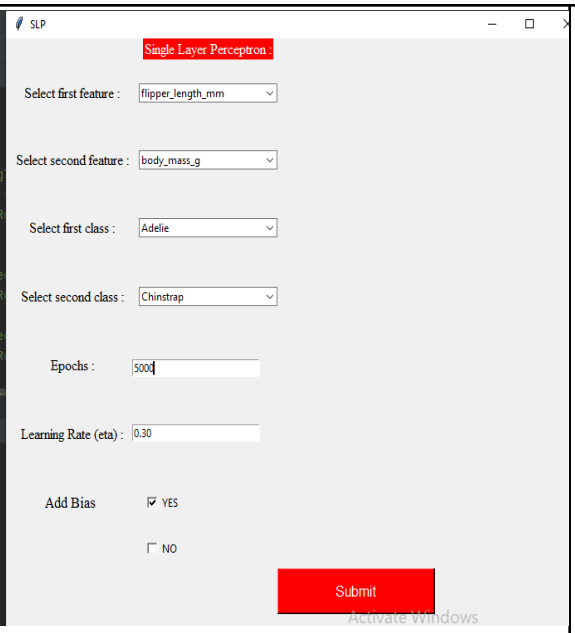


Accuracy:

without bias

: 52.5%

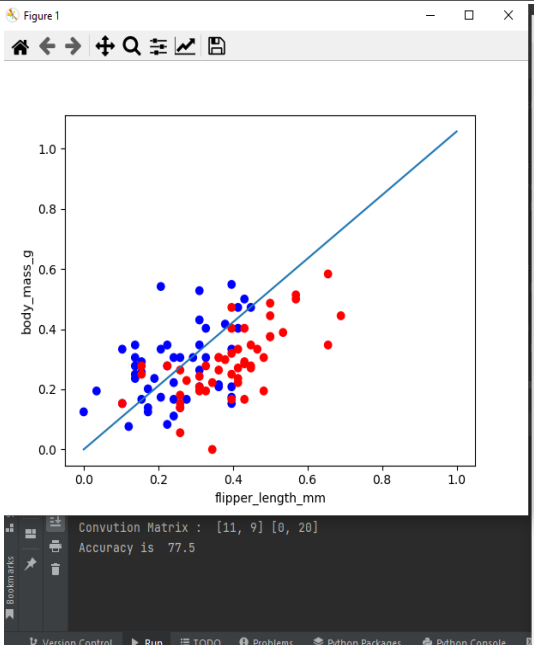


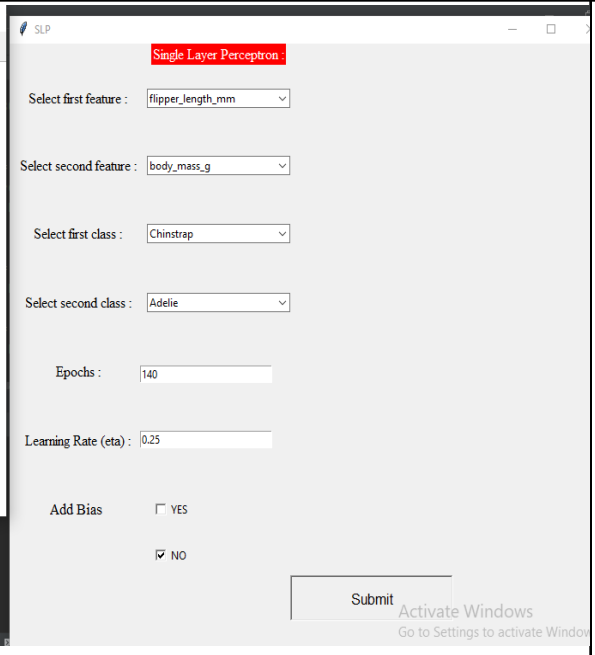


Accuracy:

with bias

: 70%

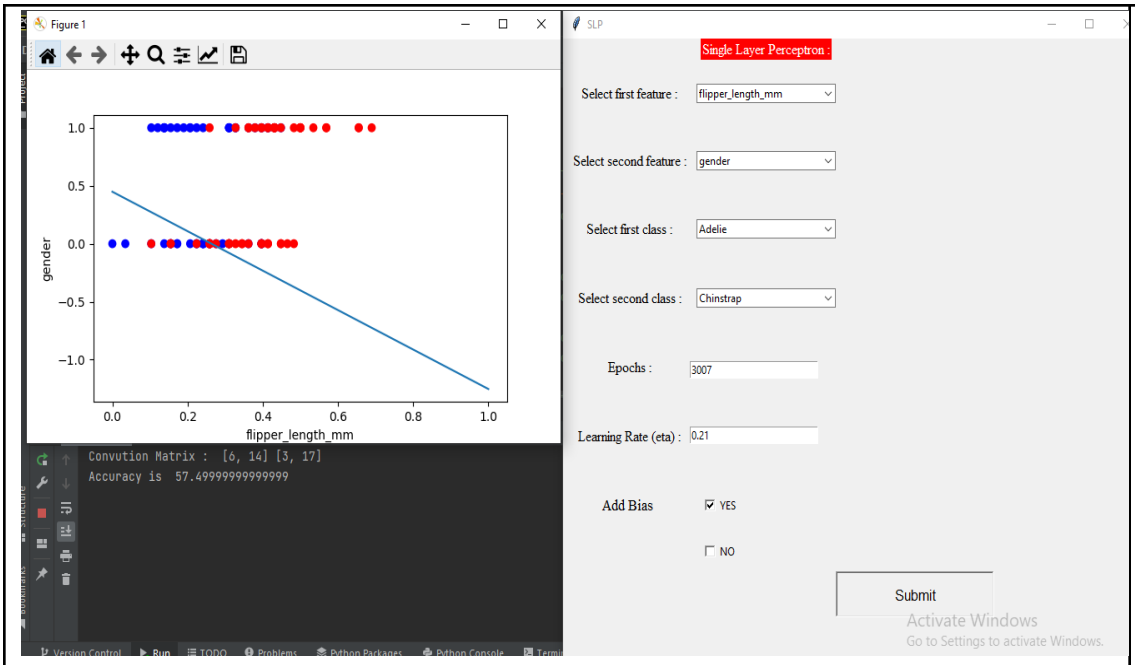
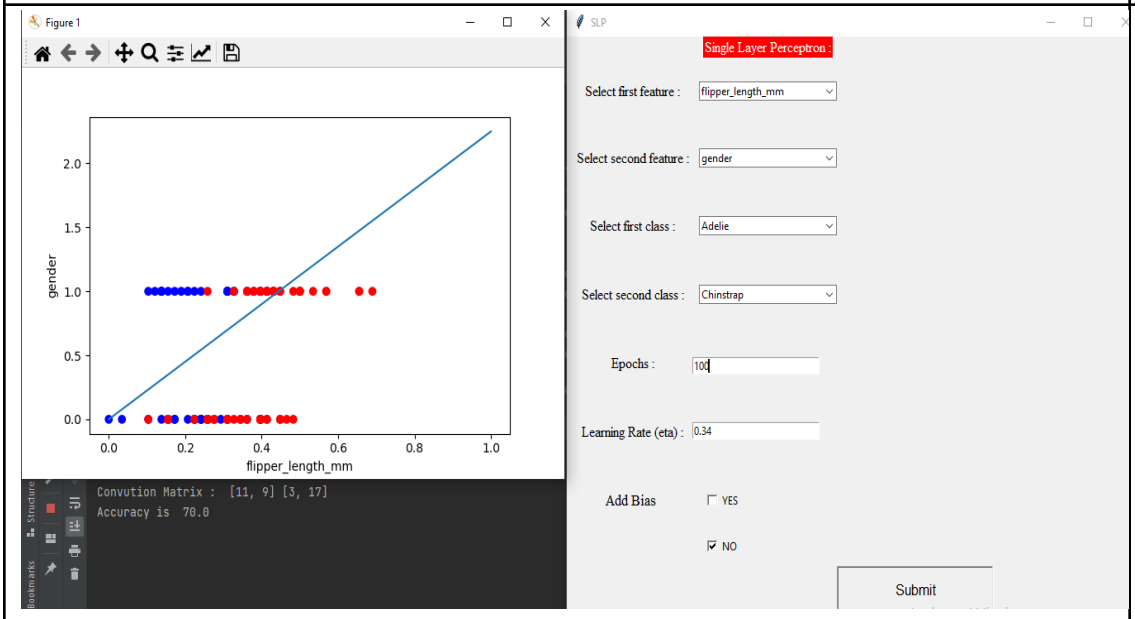


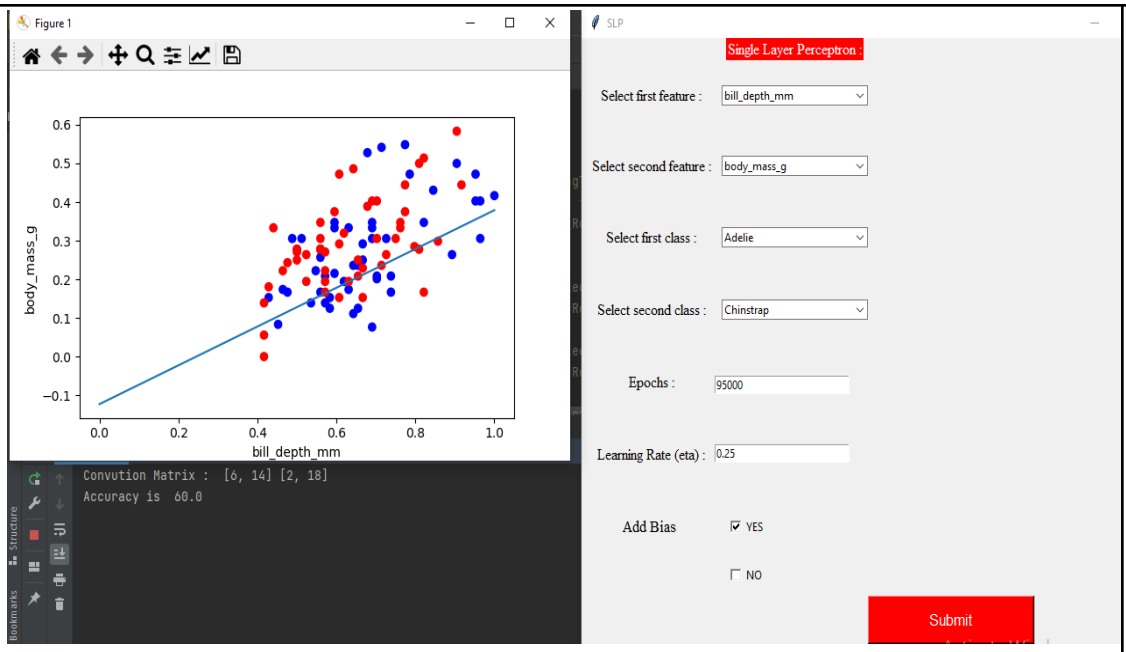
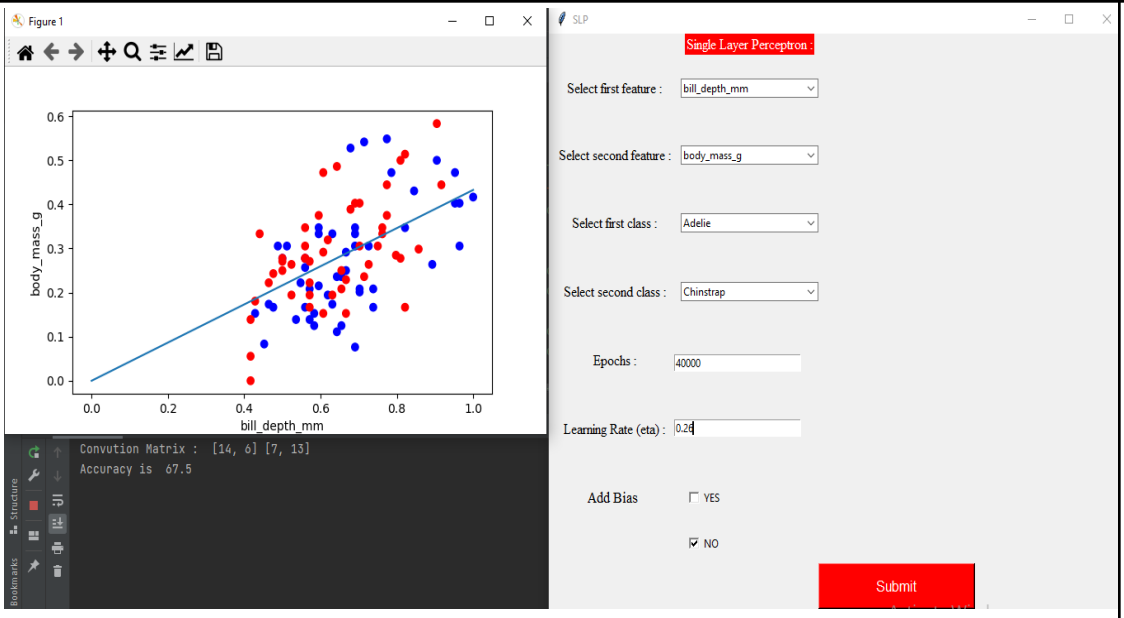


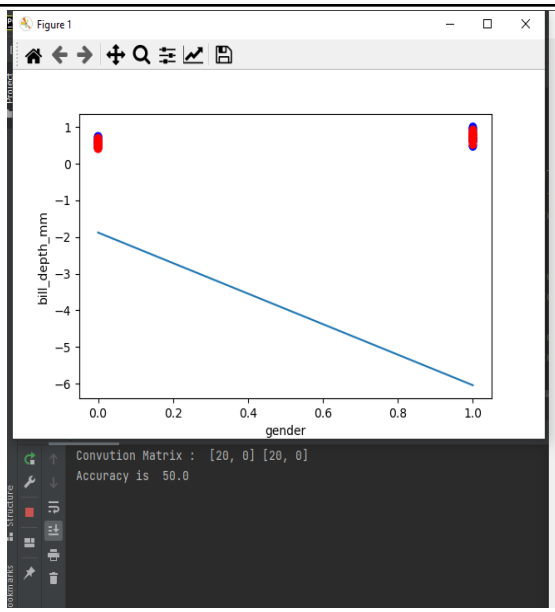
Accuracy:

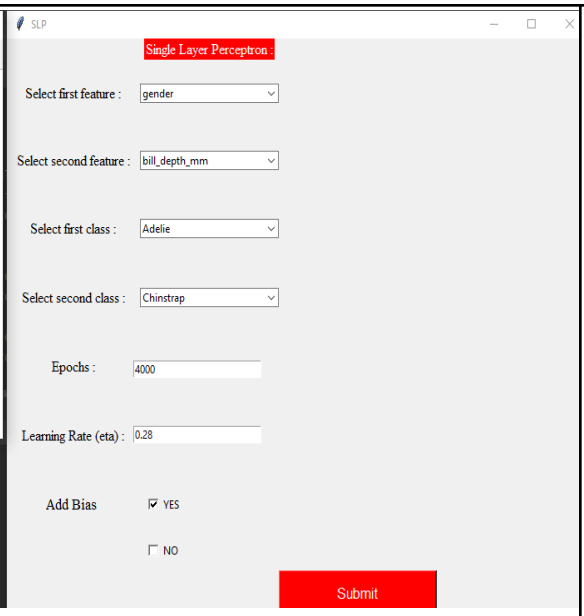
without bias

: 77.5%

	Accuracy: with bias : 57.5%
	Accuracy: without bias : 70%

	Accuracy: with bias : 60%
	Accuracy: without bias : 67.5%

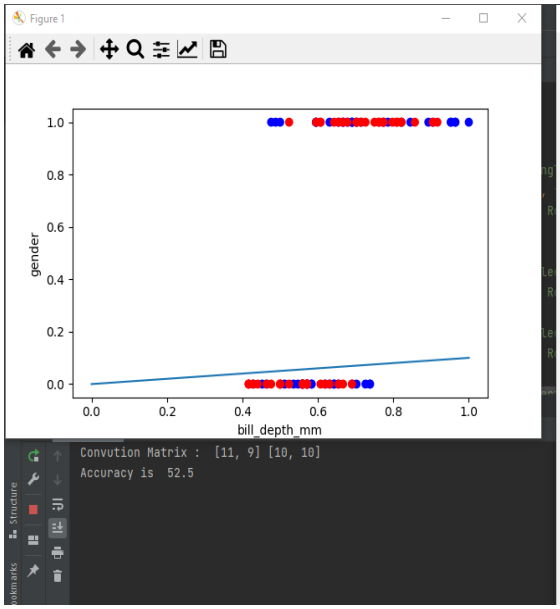


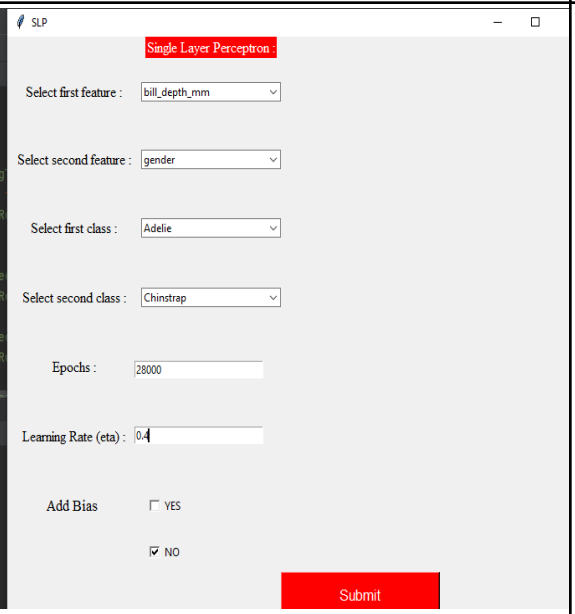


Accuracy:

with bias

: 50%

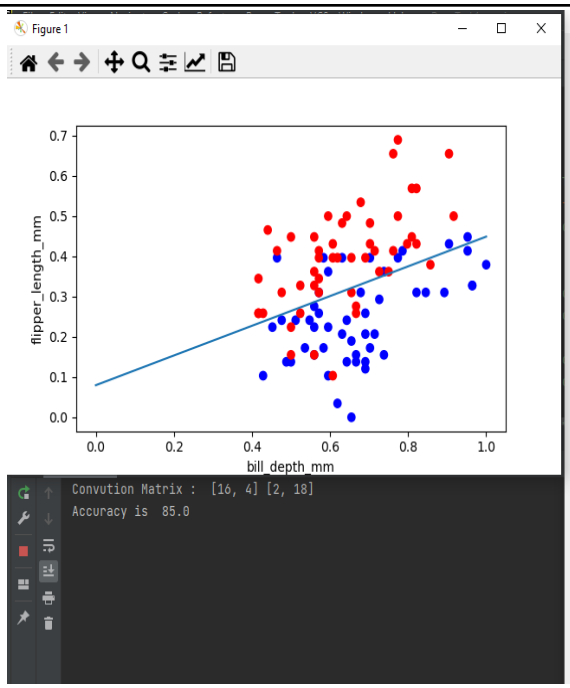


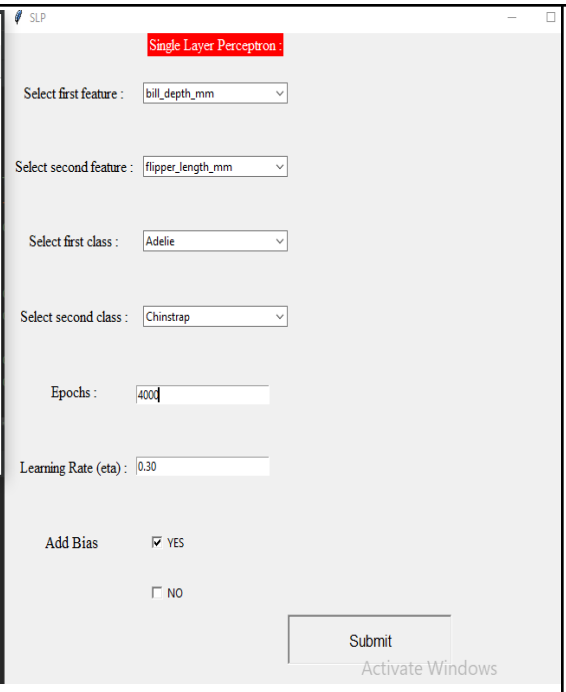


Accuracy:

without bias

: 52%

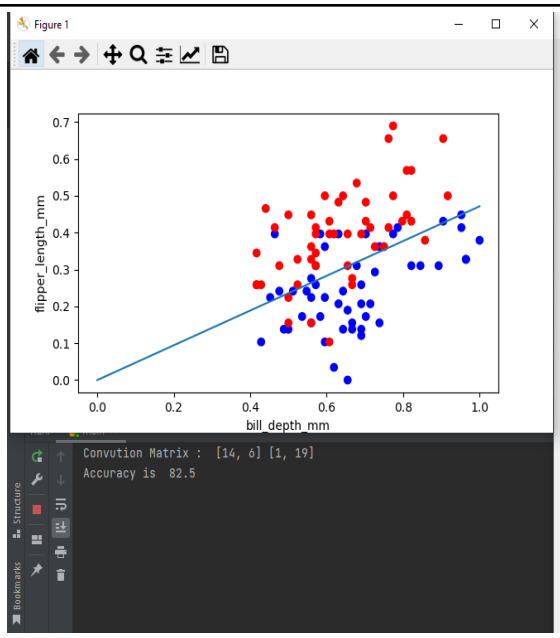


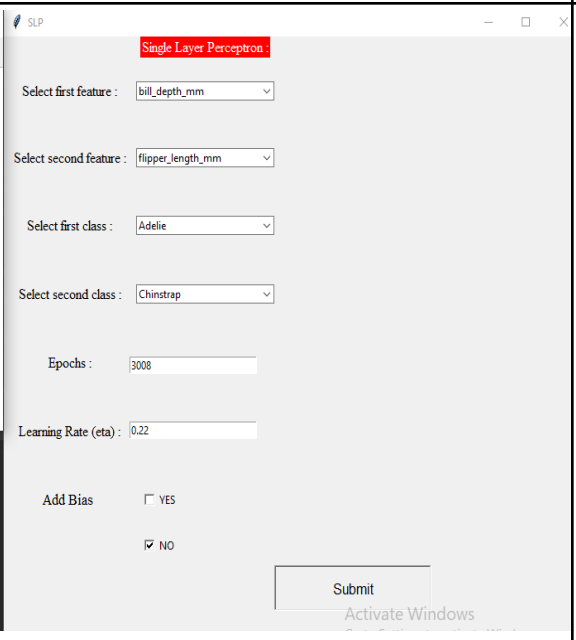


Accuracy:

with bias

:85%

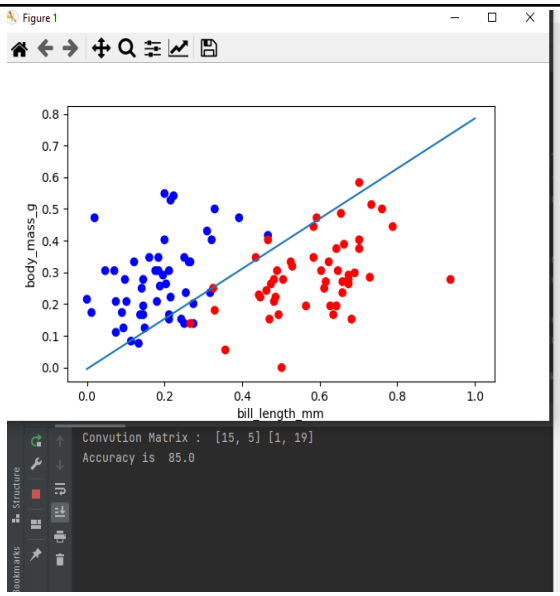


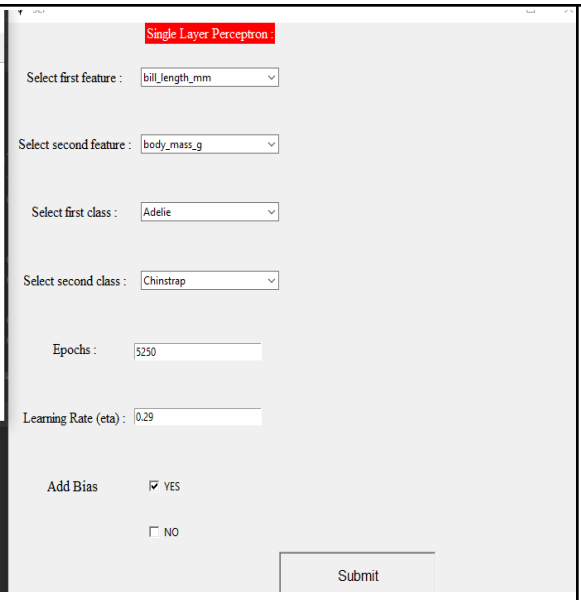


Accuracy:

without bias

: 82.5%

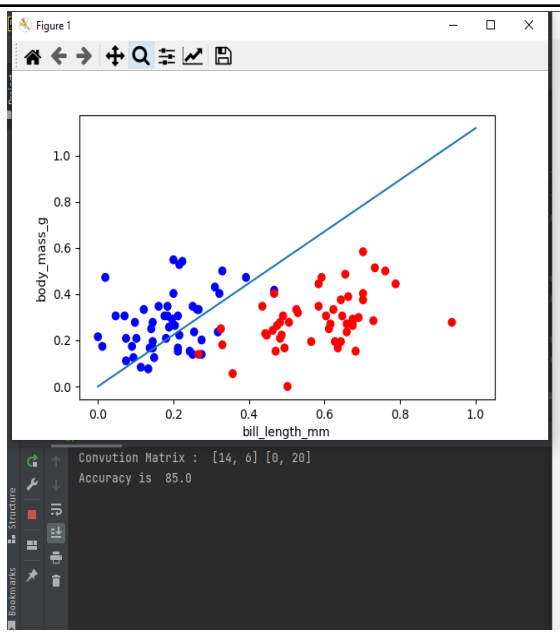


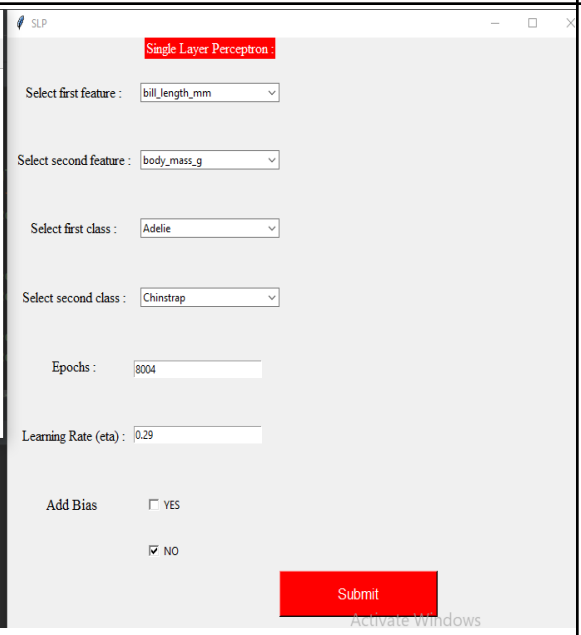


Accuracy:

with bias

: 85%

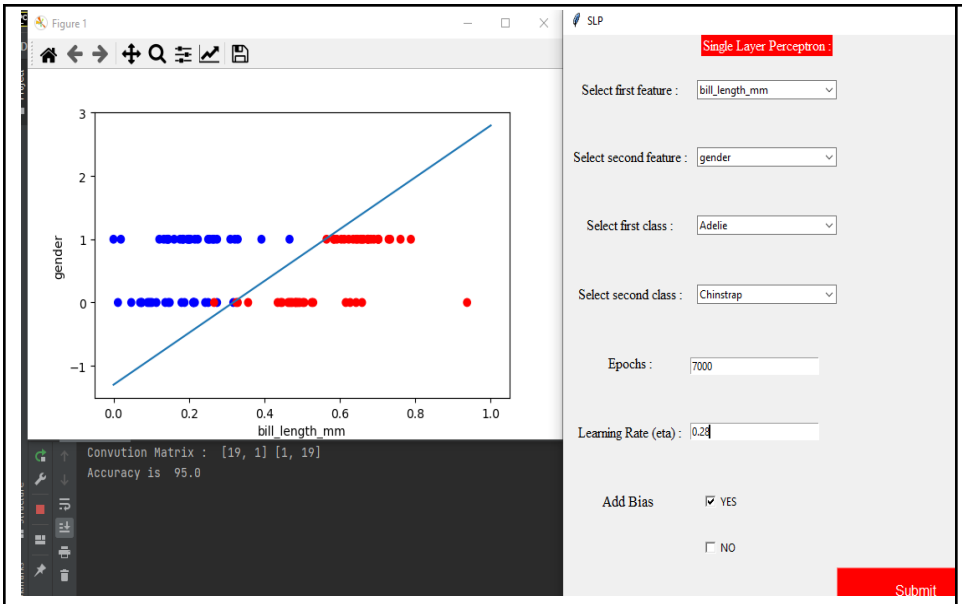
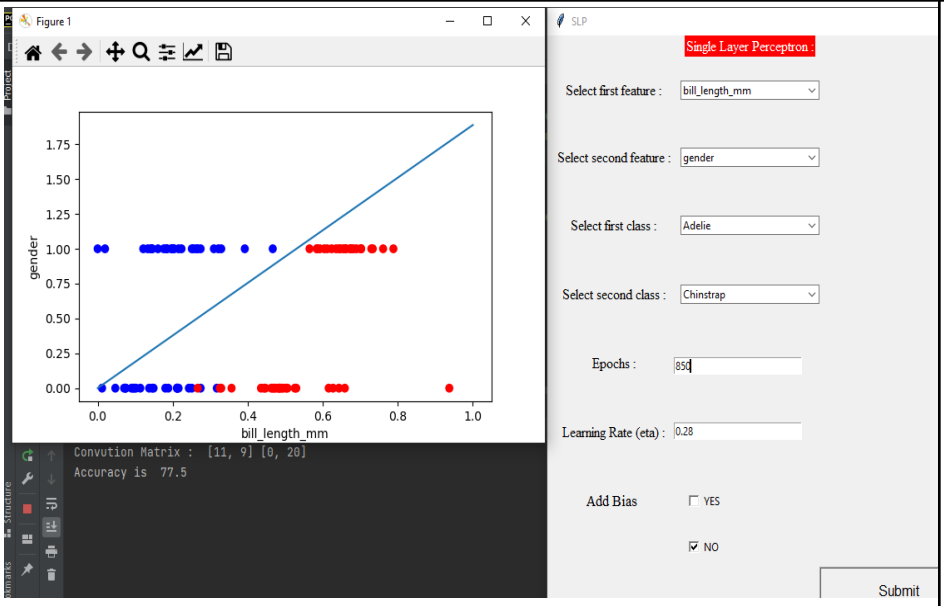


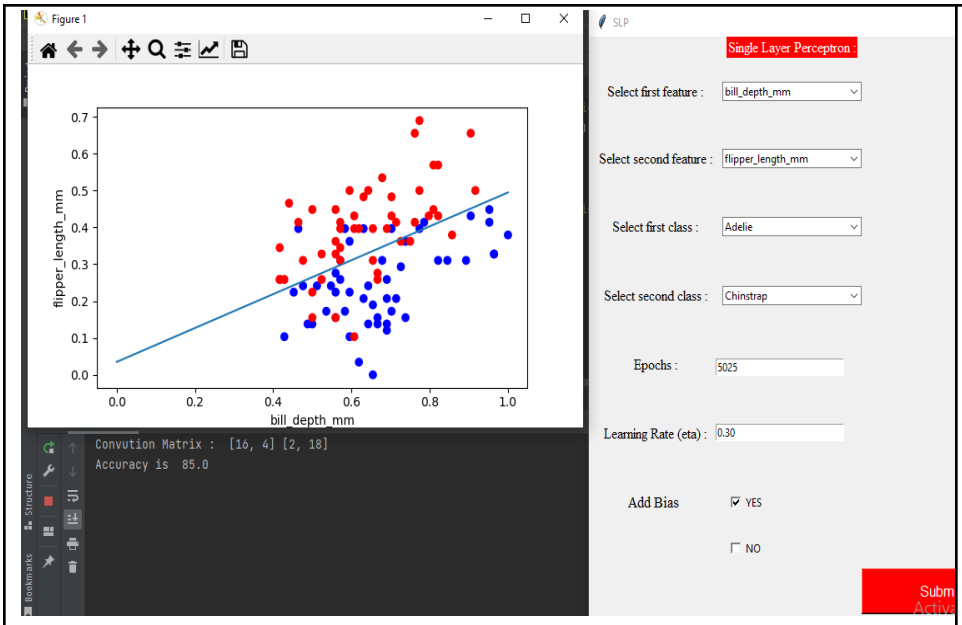
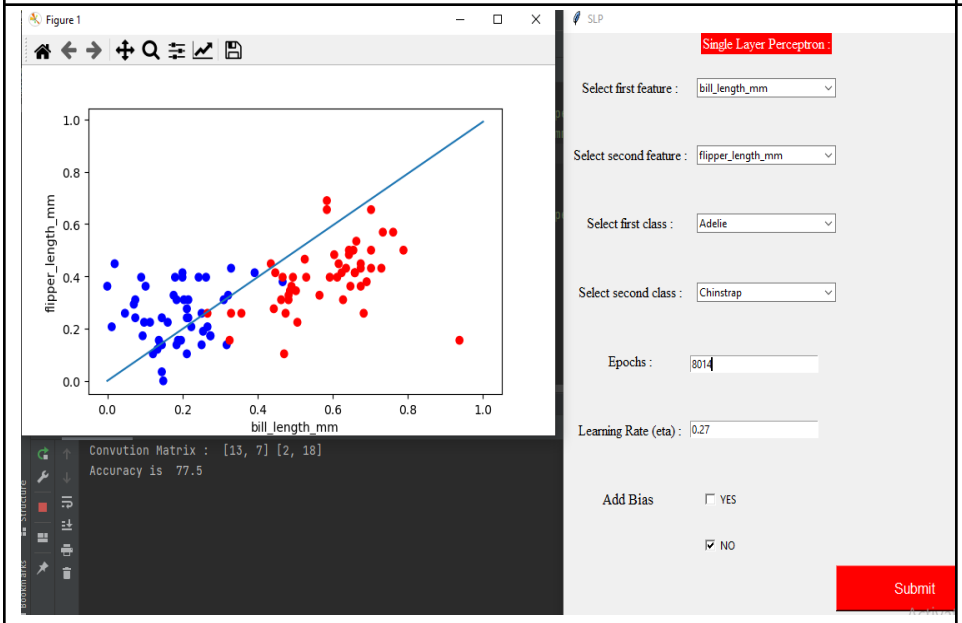


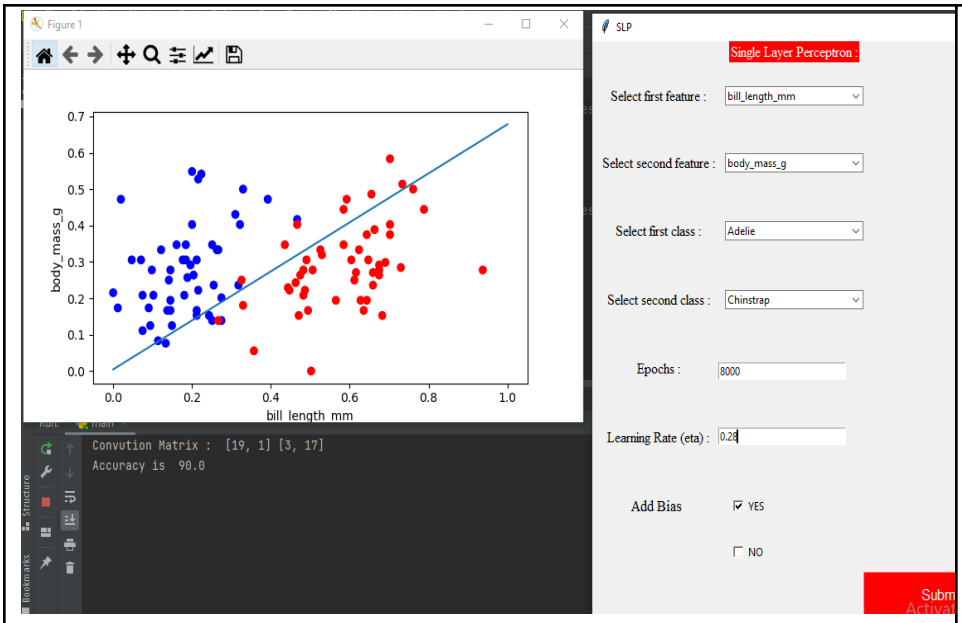
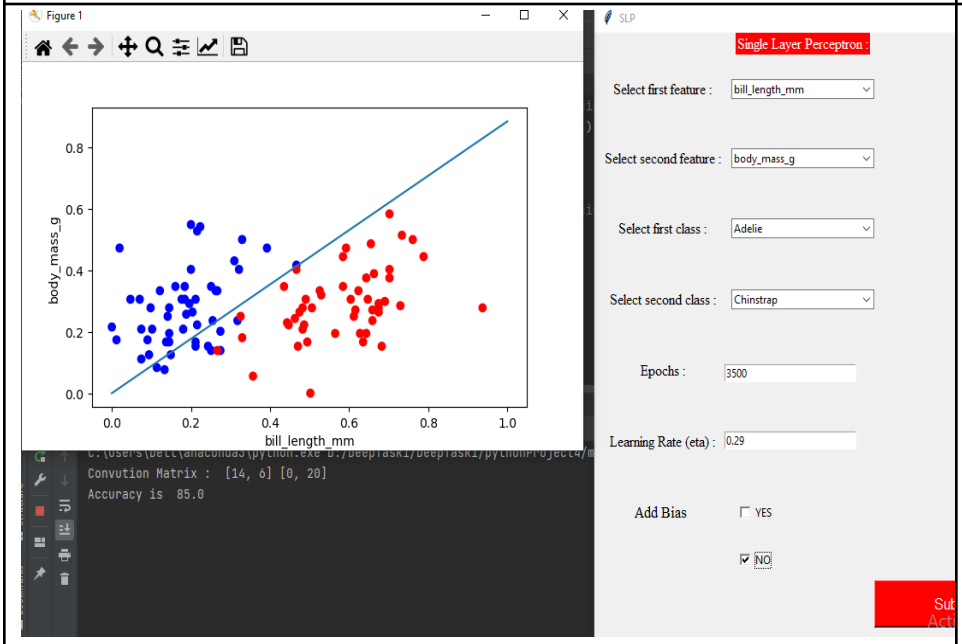
Accuracy:

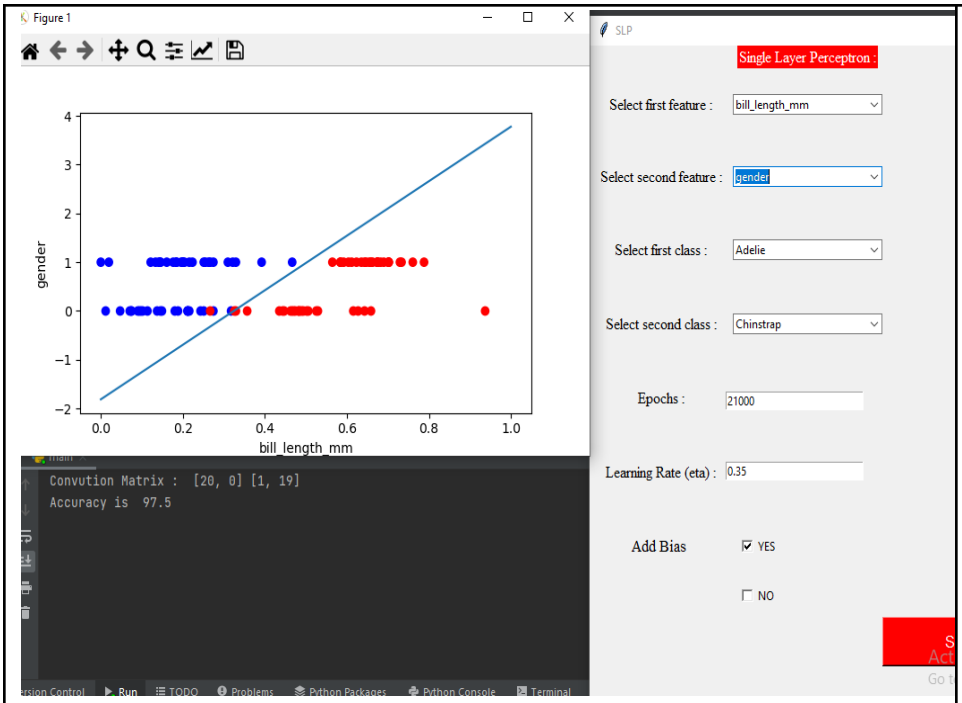
without bias

: 85%

	Accuracy: with bias : 95%
	Accuracy: without bias : 77.5%

	Accuracy: with bias : 85%
	Accuracy: without bias : 77.5%

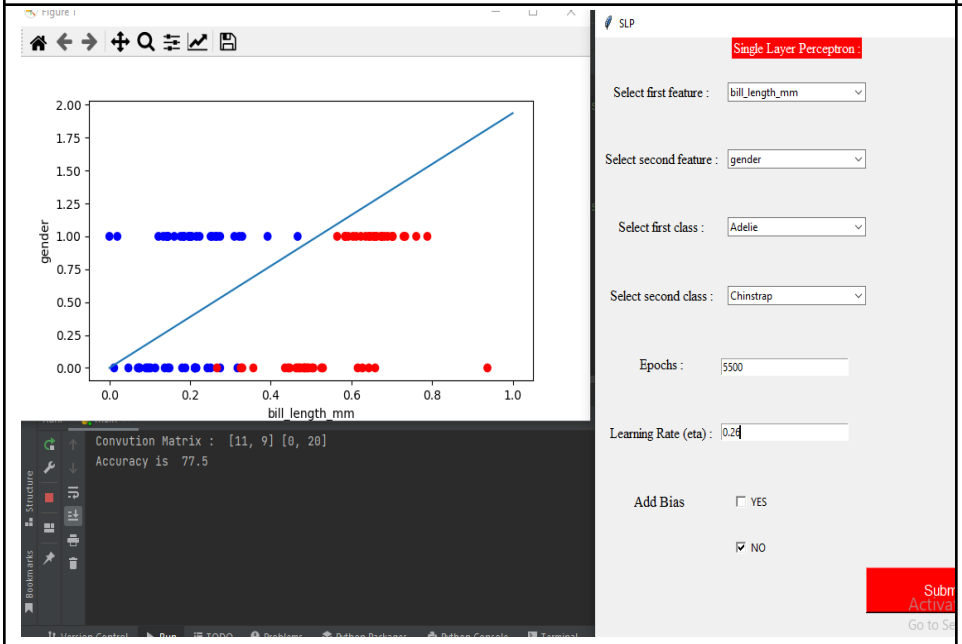
	Accuracy: with bias : 90%
	Accuracy: without bias : 85%



Accuracy:

with bias

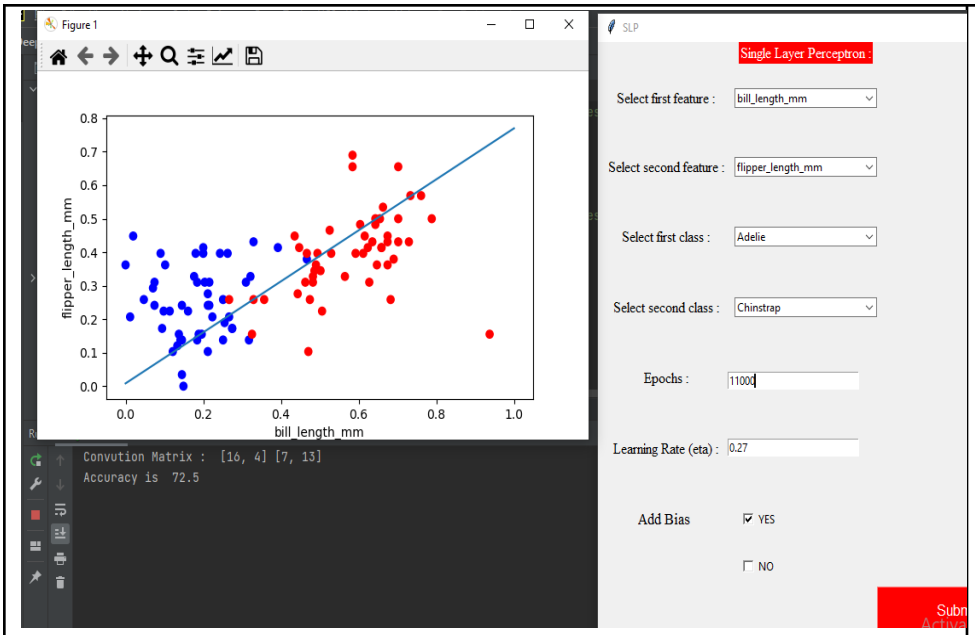
: 97.5%



Accuracy:

without bias

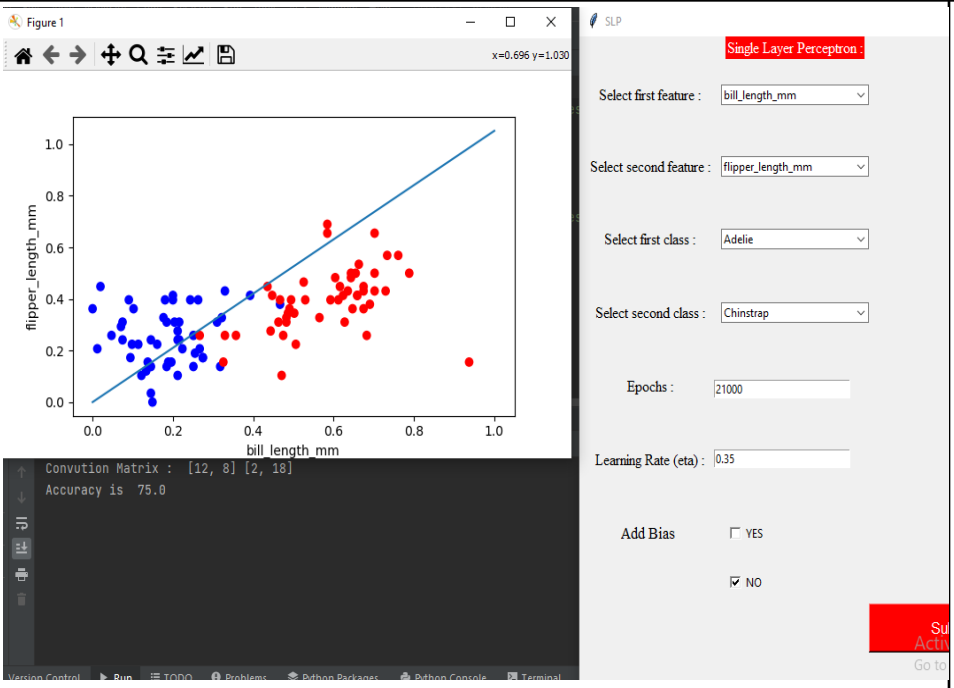
: 77.5%



Accuracy:

with bias

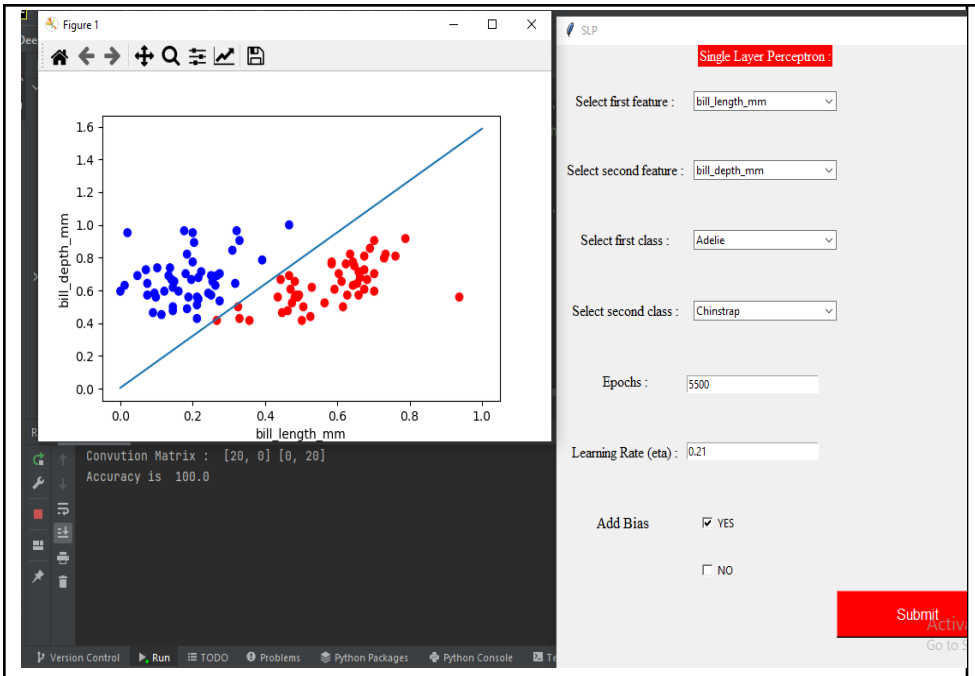
: 72.5%



Accuracy:

with bias

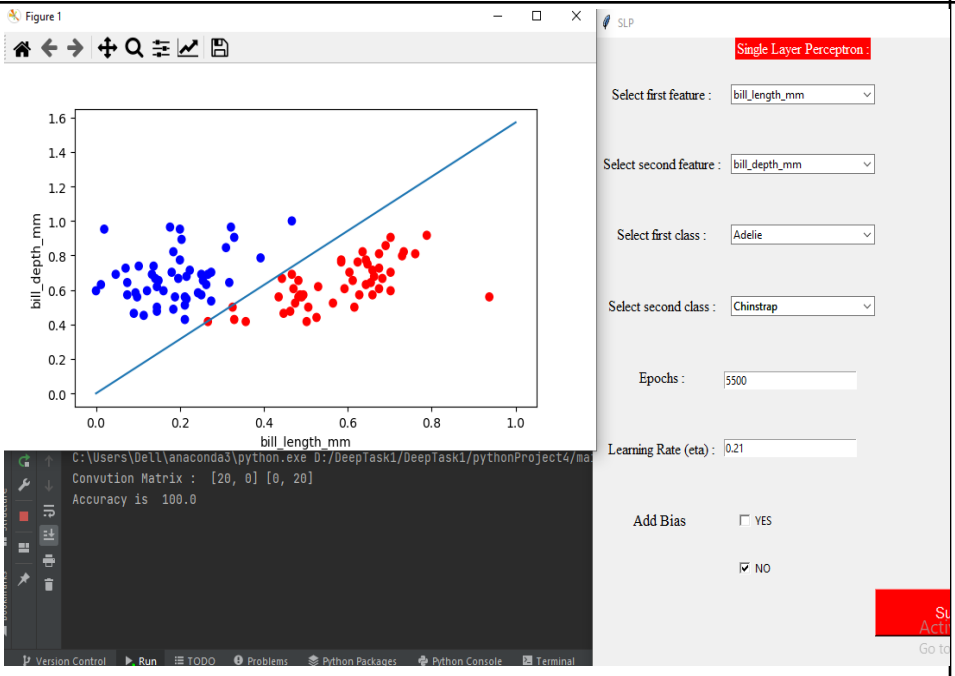
: 75%



Accuracy:

with bias

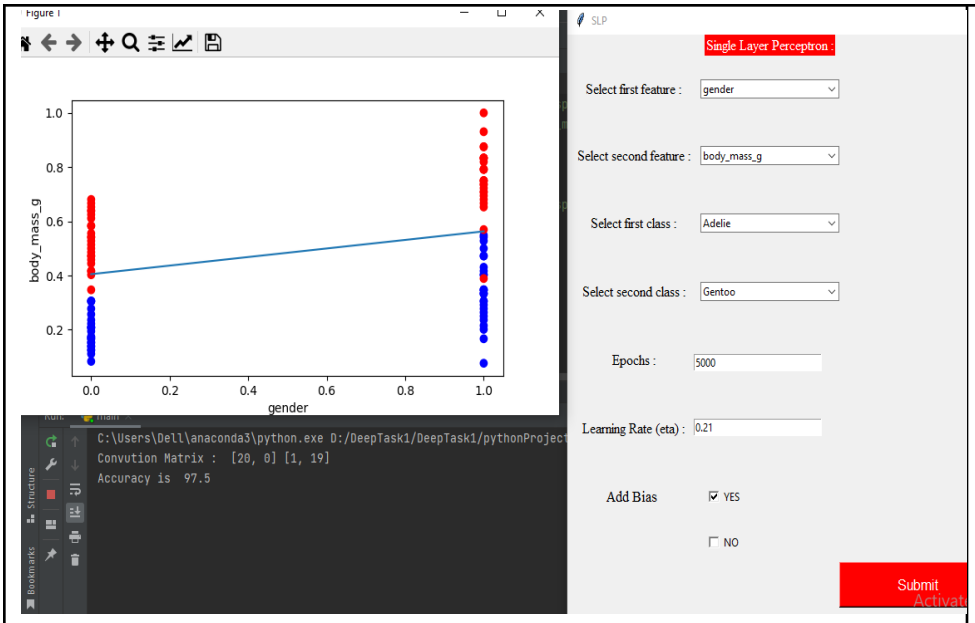
: 100%



Accuracy:

with bias

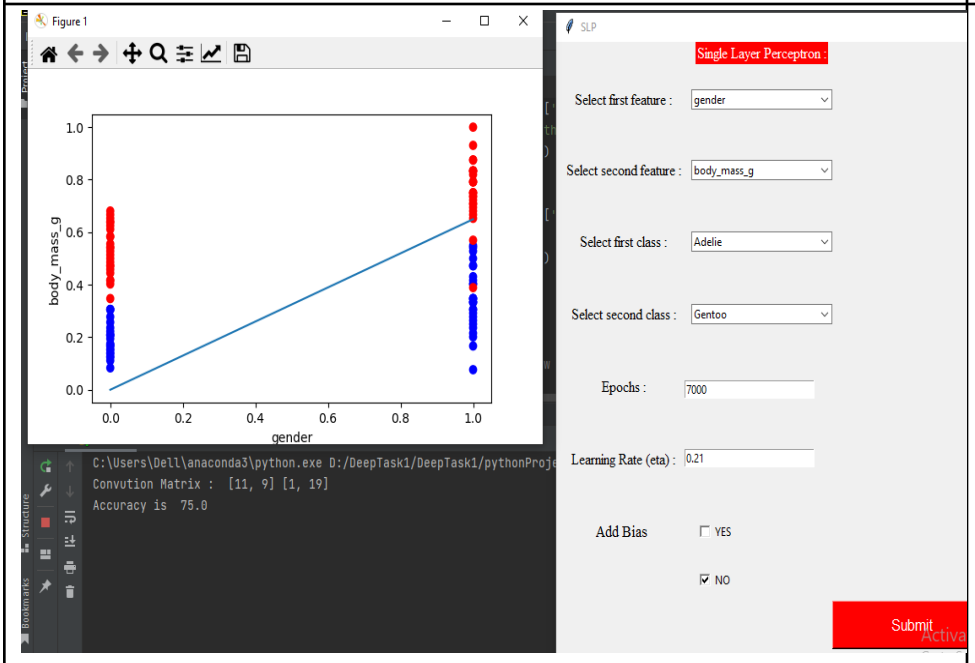
: 100%



Accuracy:

with bias

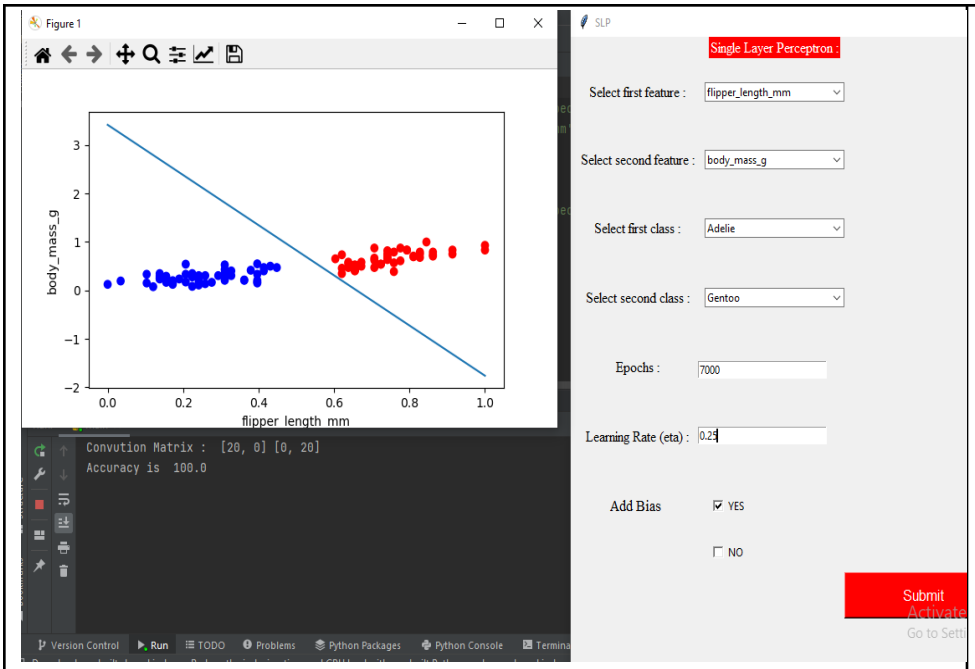
: 97.5%



Accuracy:

without bias

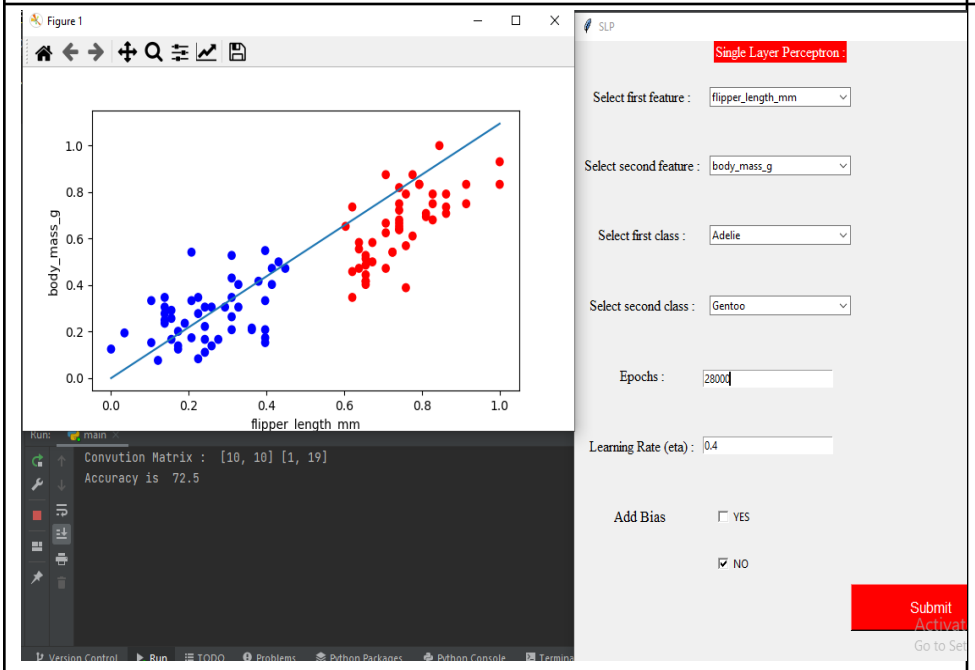
: 75%



Accuracy:

with bias

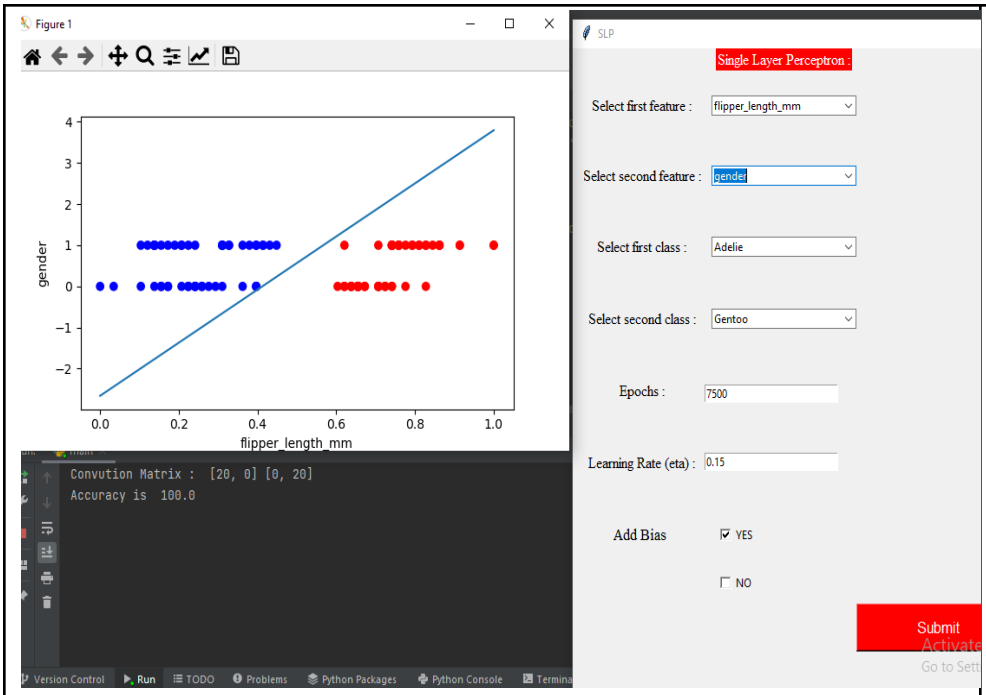
: 100%



Accuracy:

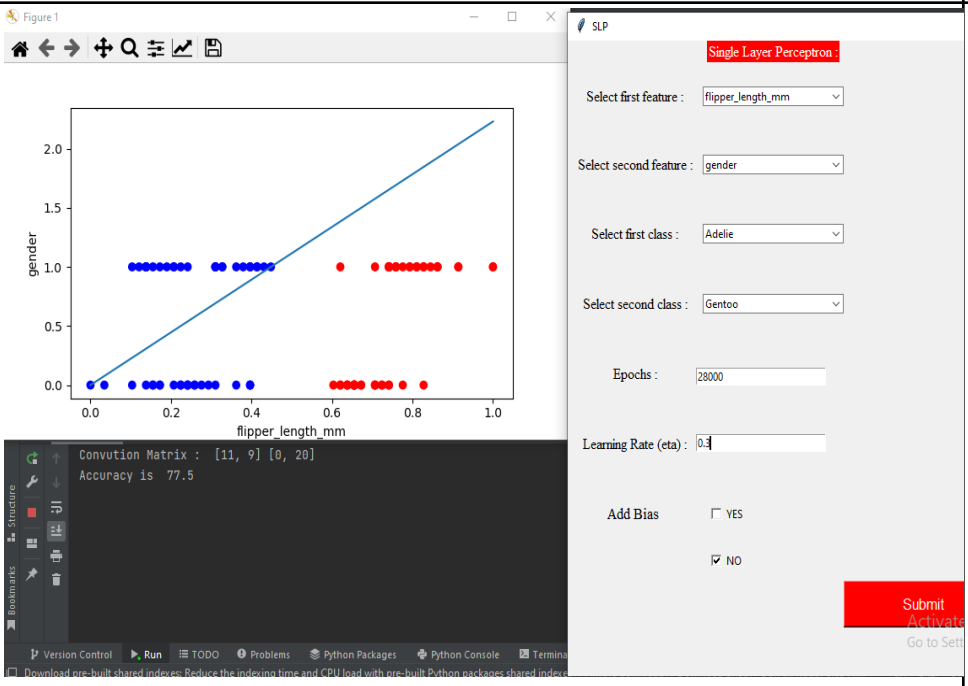
with bias

: 72.5%



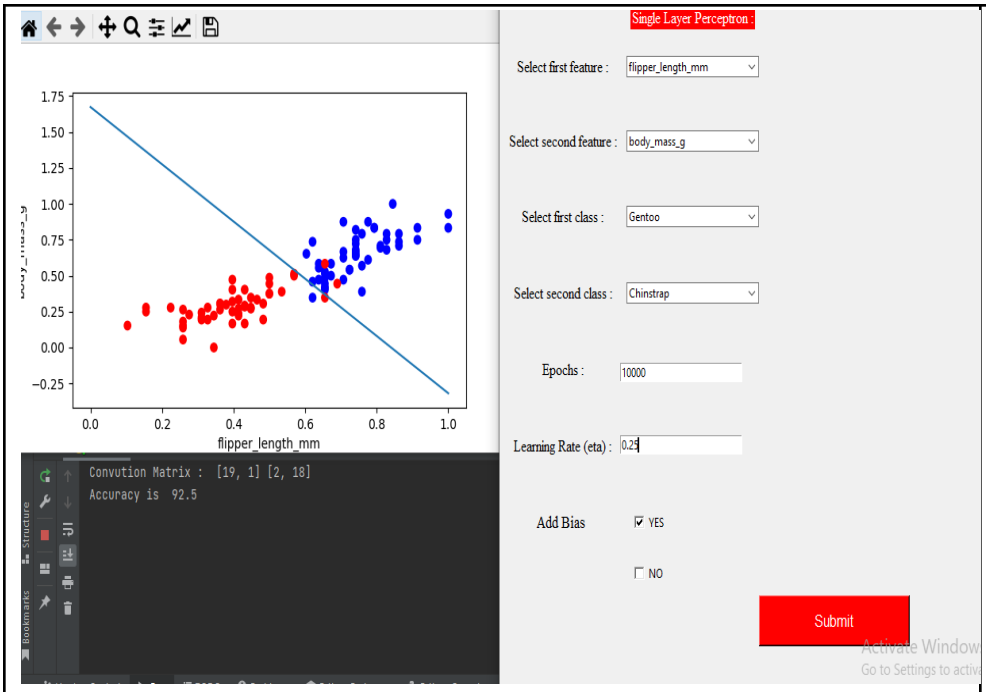
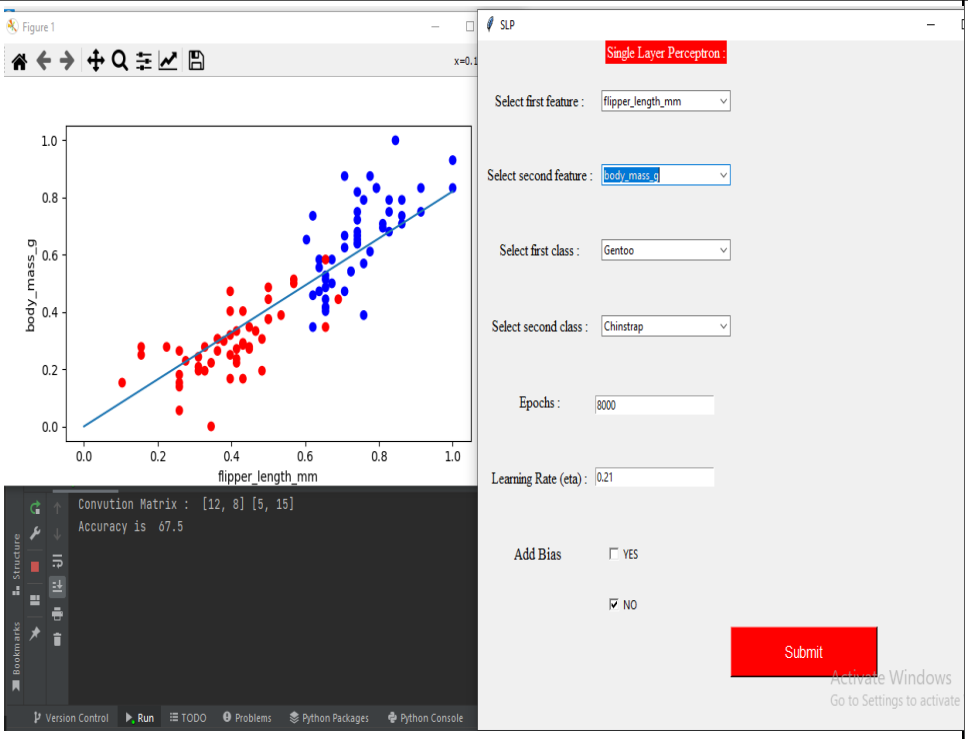
Accuracy :

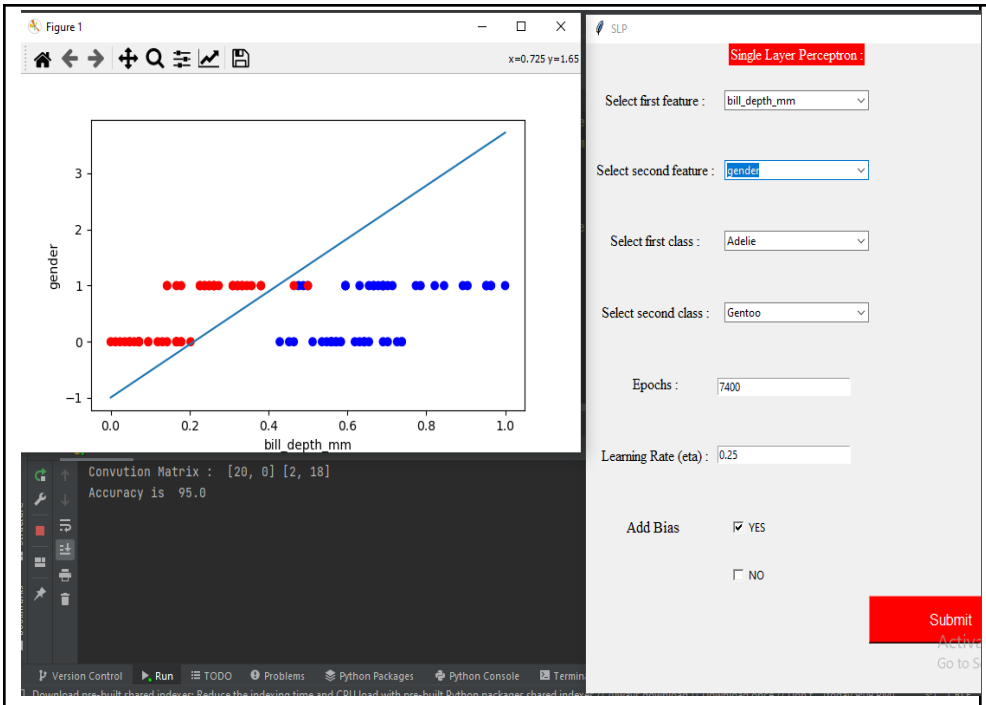
with bias : 100%



Accuracy :

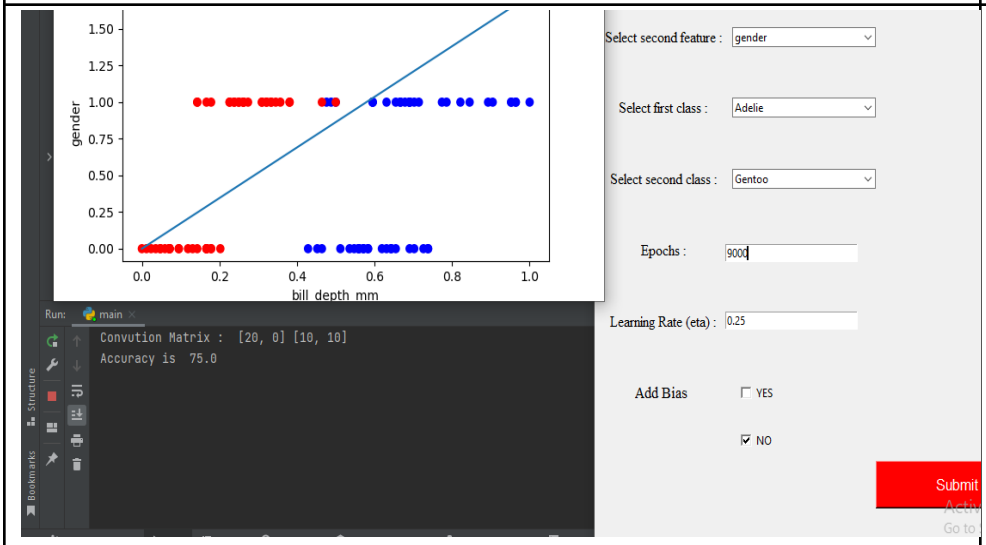
without bias : 77.5%

	Accuracy : with bias : 92.5%
	Accuracy : without bias : 67.5%



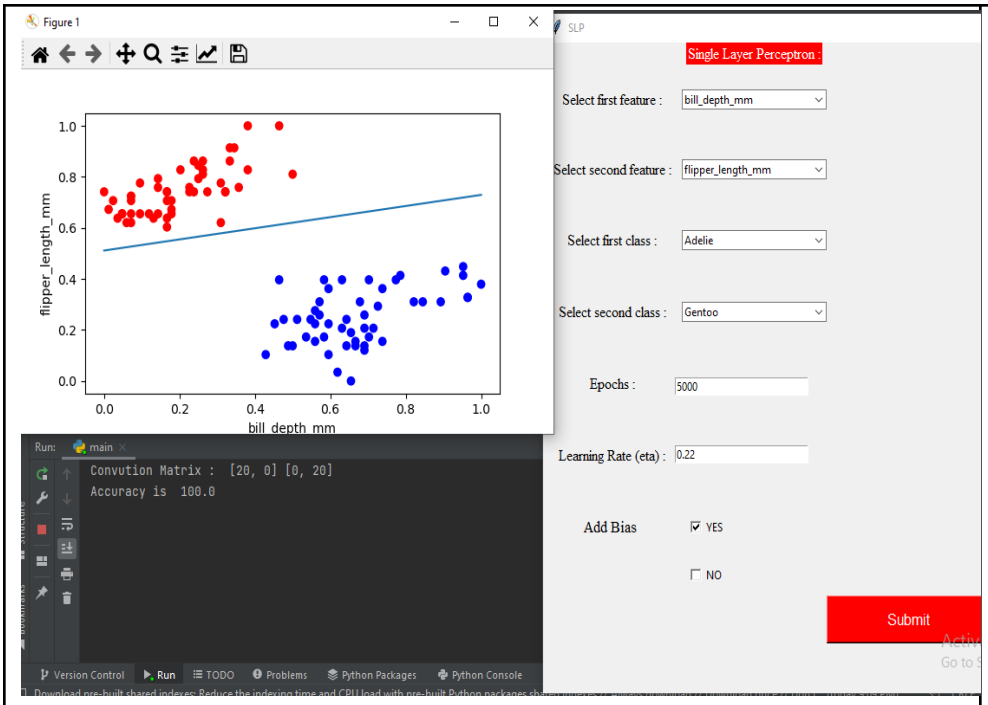
Accuracy :

with bias : 95%



Accuracy :

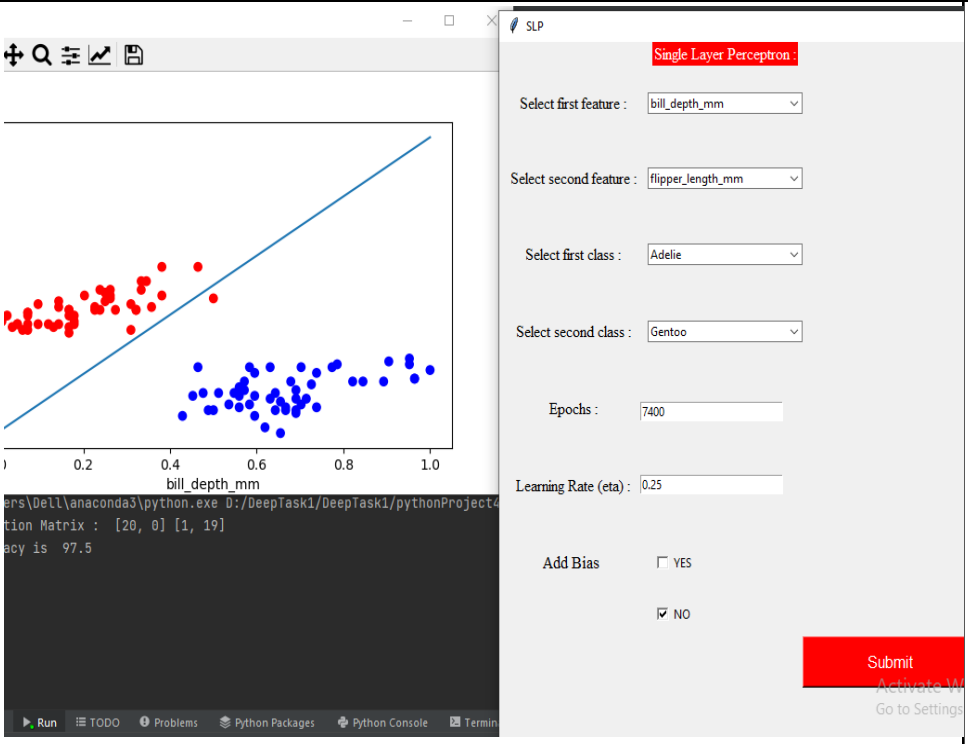
with bias : 75%



Accuracy :

with bias

: 100%



Accuracy :

without bias

: 97.5%

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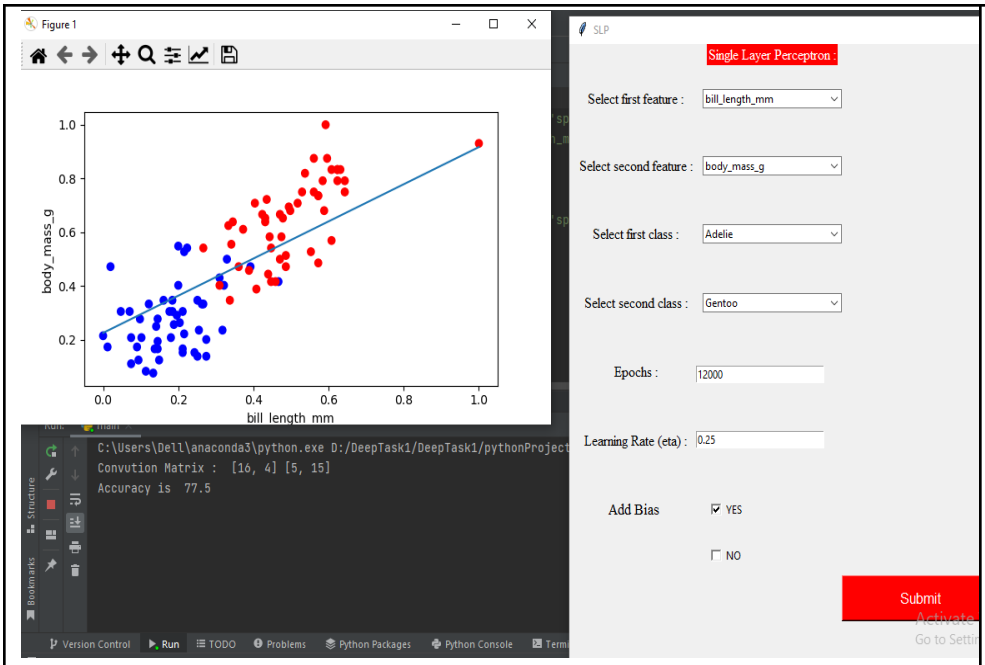
<td> 
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<td>Accuracy :

with bias

: 77.5%</td>
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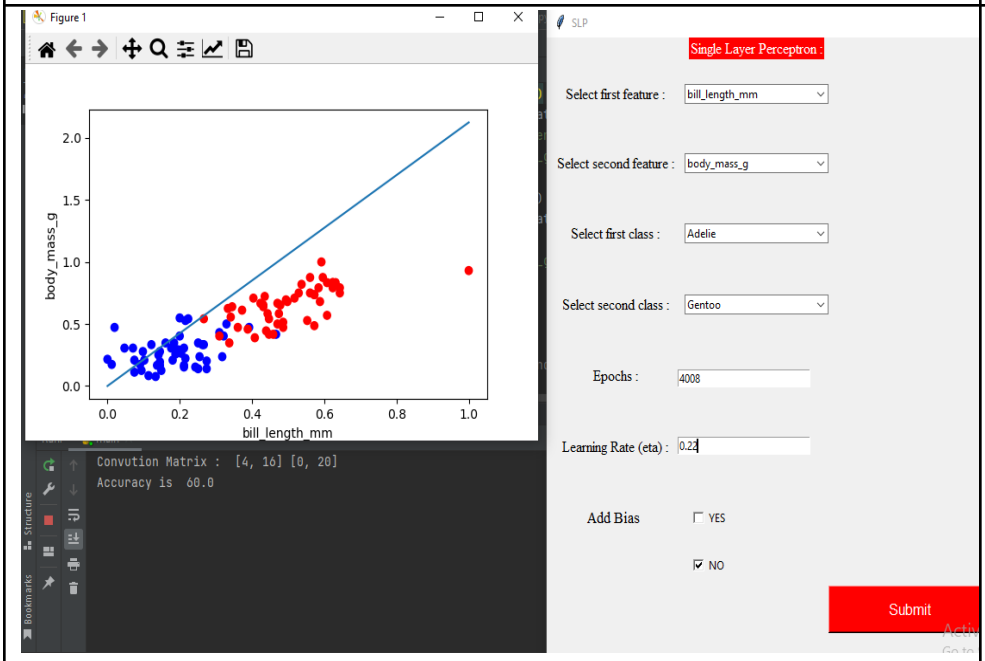
<td> 
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<td>Accuracy :

without bias

: 60%</td>
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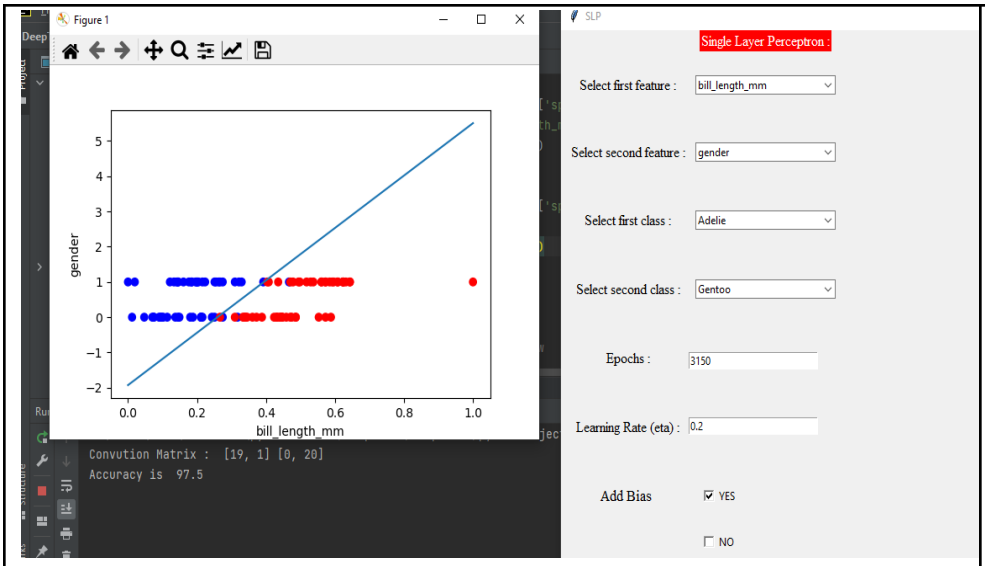
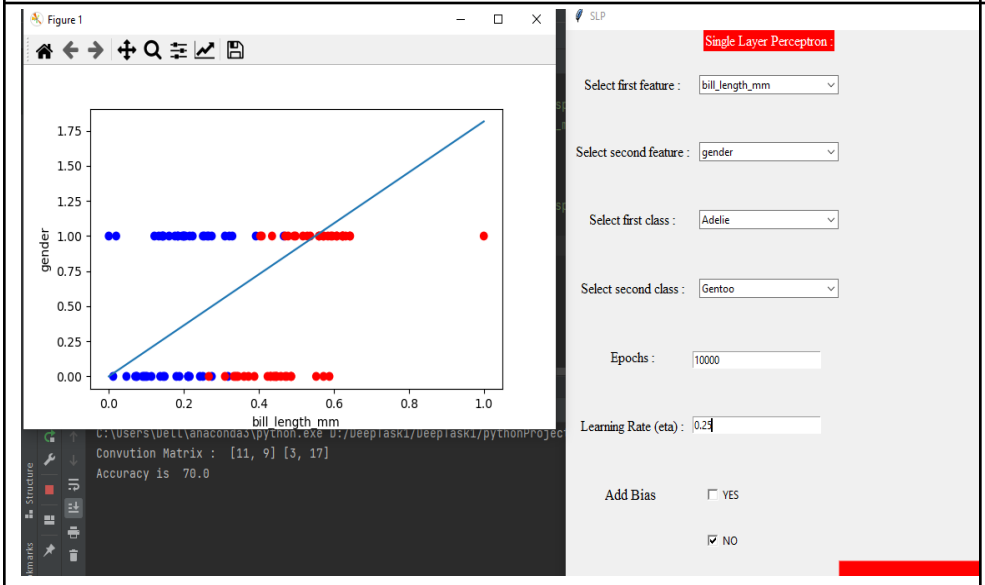
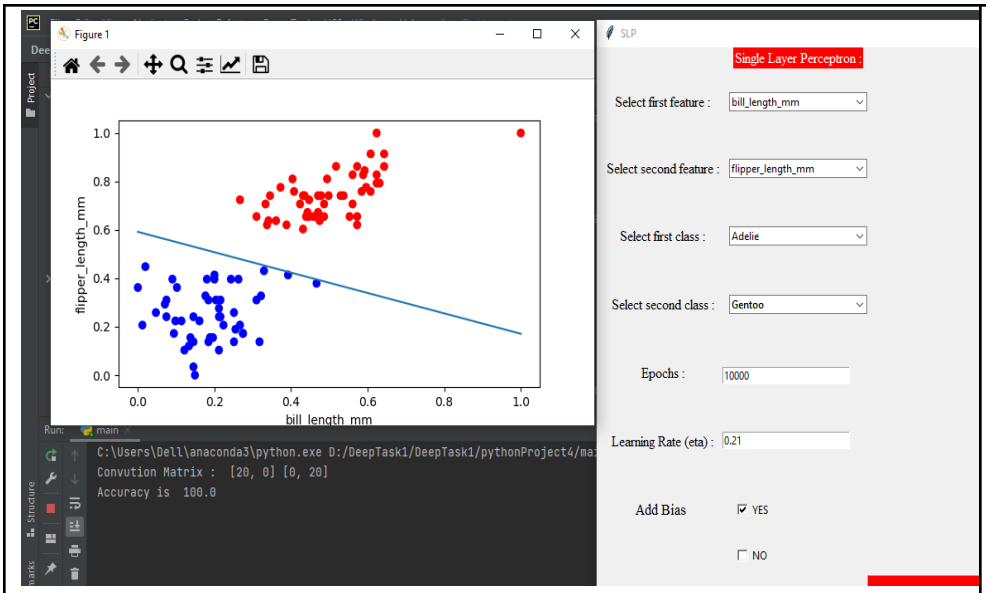
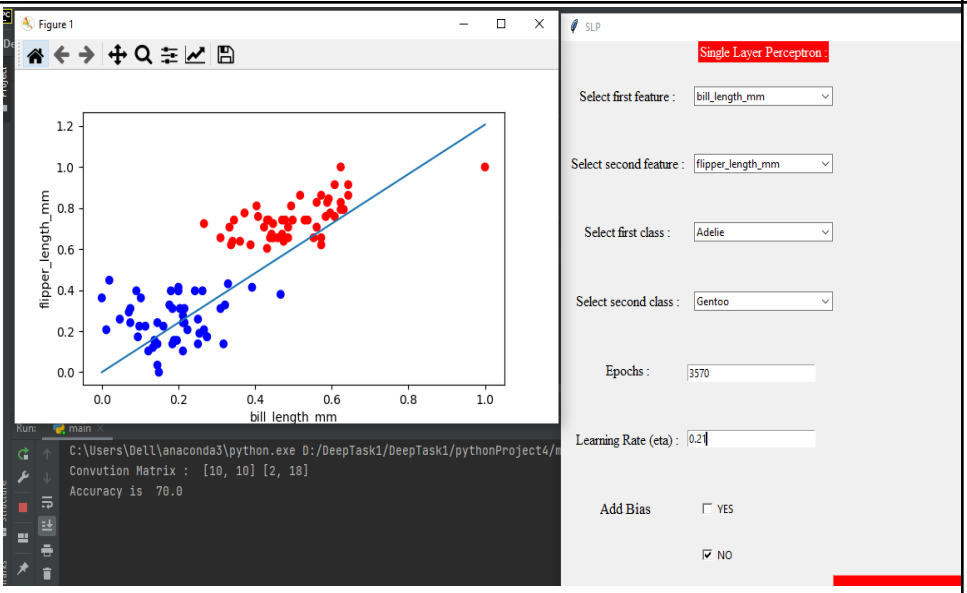
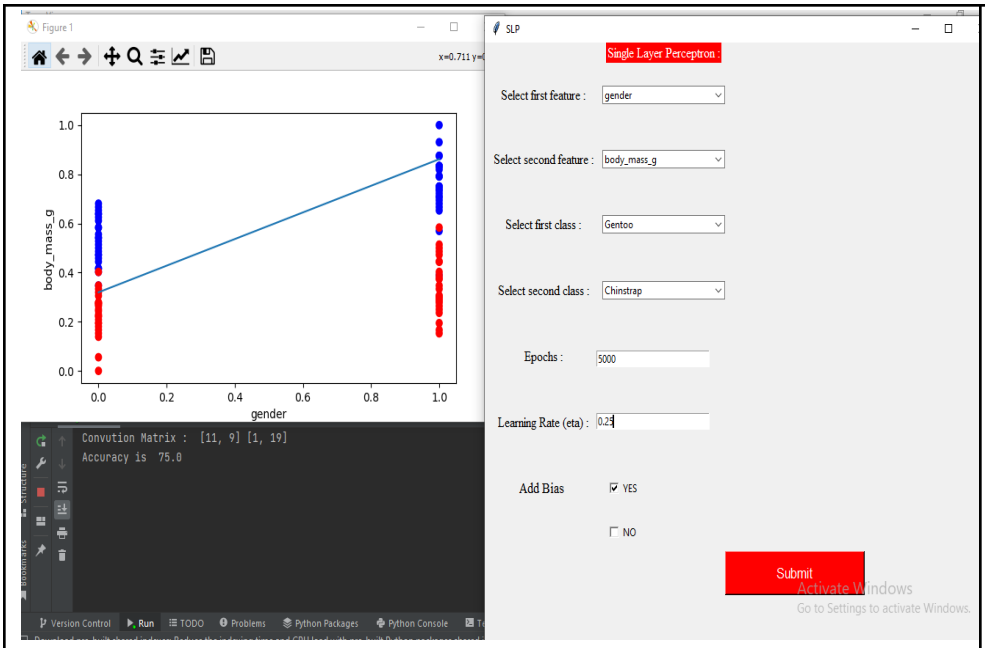
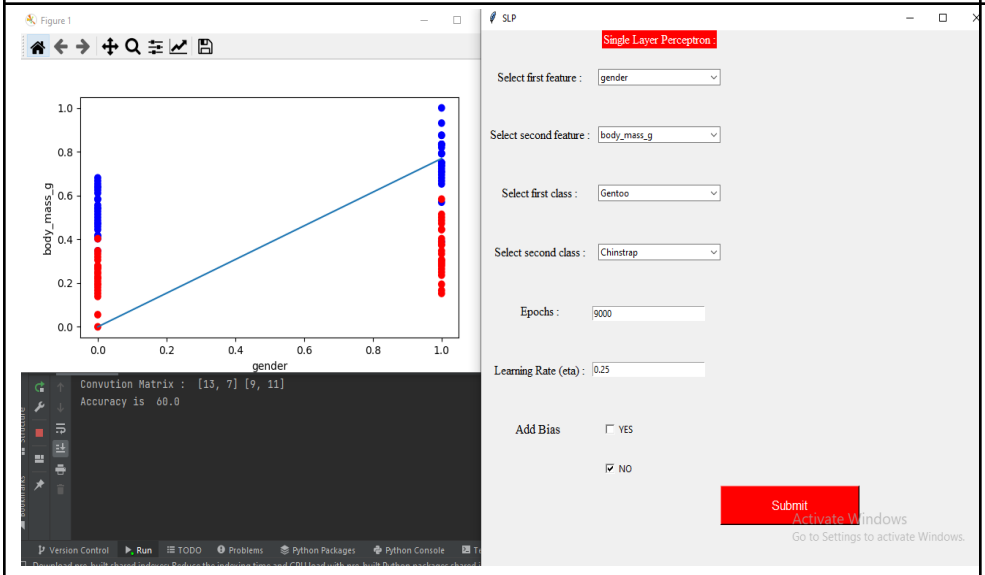
	Accuracy : with bias : 97.5%
	Accuracy : without bias : 70%

	Accuracy : with bias : 100%
	Accuracy : without bias : 70%

	Accuracy : with bias : 75%
	Accuracy : without bias :60%

- **Conclusion** :

  Bill Length and Bill Depth achieved the highest accuracy :

  - With Bias :100%
  - Without Bias :97.5%

  Bill Length and Flipper Length achieved high accuracy :

  - With Bias :100%
  - Without Bias :70.5%

Bill depth and body mass achieved high accuracy :

-With Bias :100%

-Without Bias :100%