ECEN 758 DMA – Assignment 1

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**Problem 1**

1. False. Mean is not robust.
2. True. Median is robust.
3. False. Standard deviation is not robust.

**Problem 2**

1. Mean (X) = 71.45

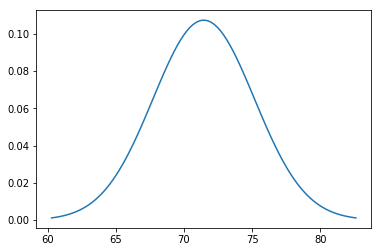
Median (X) = 71.5

Mode (X) = 74

1. Sample Variance (Y) = 1369.21
2. Mean (X) = 71.45

Variance (X) = 13.8475

Probability density function:

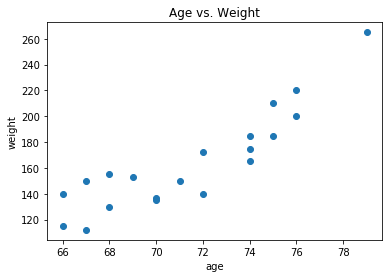


1. Freq (X > 80) = 0
2. Mean (XY) = [71.45, 164.7]

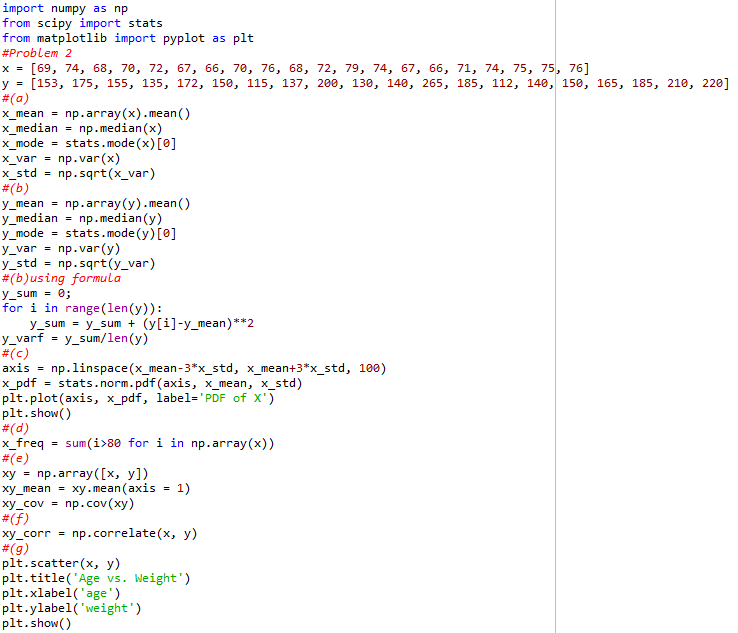
|  |  |
| --- | --- |
| 13.8475 | 122.435 |
| 122.435 | 1369.21 |

Covariance matrix (XY) =

1. Correlation (X Y) = 0.88917
2. Age vs. weight:



**Code for problem 2:**



**Problem 3**

1. Mean = [6, -12]

|  |  |
| --- | --- |
| 17.6 | -38.0 |
| -38.0 | 88.4 |

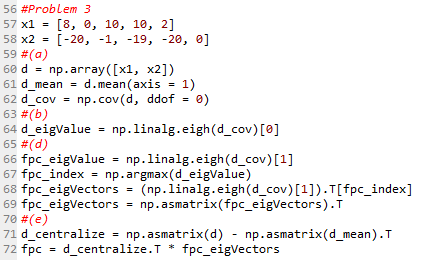
Covariance matrix =

1. Eigenvalues = [1.0658, 104.9342]
2. Dimension = 1
3. First principal component: [-0.39897876, 0.91696017]

|  |
| --- |
| -8.13364 |
| 12.4804 |
| -8.01464 |
| -8.9316 |
| 12.5994 |

1. Projected coordinate:

**Code for problem 3:**



**Problem 4**