python version = 3.5.2

numpy version = 1.16.1

run the implement.py in Pycharm.

Input a list to predict.

```
Please input a target to predict(In the form of 155, 40, 35).
190, 70, 35
```

Then implement the KNN algorithm:

Set the parameter k and age_included.

```
Implement KNN algorithm:
Please input the value of K(Could be 1, 3, 5 in this problem).
5
Please input the value of age_included(1 means age is included, 0 is not).
1
The distance between Point [170  57  32   0] and target is: 24.041631
The distance between Point [192  95  28   1] and target is: 26.038433
The distance between Point [150  45  30   0] and target is: 47.434165
The distance between Point [170  65  29   1] and target is: 21.470911
The distance between Point [175  78  35   1] and target is: 17.000000
The distance between Point [185  90  32   1] and target is: 20.832667
The distance between Point [170  65  28   0] and target is: 21.771541
The distance between Point [155  48  31   0] and target is: 41.533119
The distance between Point [160  55  30   0] and target is: 33.911650
The distance between Point [182  80  30   1] and target is: 13.747727
The distance between Point [175  69  28   0] and target is: 16.583124
The distance between Point [180  80  27   1] and target is: 16.248077
The distance between Point [160  50  31   0] and target is: 36.276714
The distance between Point [175  72  30   1] and target is: 15.937377
We get the 5 nearest neighbors' distance is: [13.74772708486752, 15.937377450509228, 16.24807680927192, 16.583123951777, 17.0]
We get the 5 nearest neighbors' gender is: [1, 1, 1, 0, 1]
So we can predict that is a: man
```

Then implement the Gaussian Naïve Bayes algorithm:

Set the parameter k.

```
Implement Naive Bayes algorithm:
Please input the value of age_included(1 means age is included, 0 is not).
1
calculating mu and sigma of height:
The mu is 179.857143 and the sigma is 7.335498.
calculating mu and sigma of weight:
The mu is 80.000000 and the sigma is 10.148892.
calculating mu and sigma of age:
The mu is 30.142857 and the sigma is 2.672612.
The probability being a man is: 7.2398052589463805e-06
calculating mu and sigma of height:
The mu is 162.857143 and the sigma is 9.063270.
calculating mu and sigma of weight:
The mu is 55.571429 and the sigma is 8.866738.
calculating mu and sigma of age:
The mu is 30.000000 and the sigma is 1.527525.
probability being a women is : 3.6601330598126806e-09
So we can predict that is a: man
```

Also we can use a for loop to calculate all the target in the target_list：

```
predicting:  [155, 40, 35]
The distance between Point [170  57  32   0] and target is: 22.869193
The distance between Point [192  95  28   1] and target is: 66.655832
The distance between Point [150  45  30   0] and target is: 8.660254
The distance between Point [170  65  29   1] and target is: 29.765752
The distance between Point [175  78  35   1] and target is: 42.941821
The distance between Point [185  90  32   1] and target is: 58.386642
The distance between Point [170  65  28   0] and target is: 29.983329
The distance between Point [155  48  31   0] and target is: 8.944272
The distance between Point [160  55  30   0] and target is: 16.583124
The distance between Point [182  80  30   1] and target is: 48.518038
The distance between Point [175  69  28   0] and target is: 35.916570
The distance between Point [180  80  27   1] and target is: 47.843495
The distance between Point [160  50  31   0] and target is: 11.874342
The distance between Point [175  72  30   1] and target is: 38.065733
We get the 5 nearest neighbors' distance is: [8.660254037844387, 8.94427190999916, 11.874342087037917, 16.583123951777, 22.869193252058544]
We get the 5 nearest neighbors' gender is: [0, 0, 0, 0, 0]
So we can predict that is a: woman
```

```
calculating mu and sigma of height:
The mu is 179.857143 and the sigma is 7.335498.
calculating mu and sigma of weight:
The mu is 80.000000 and the sigma is 10.148892.
calculating mu and sigma of age:
The mu is 30.142857 and the sigma is 2.672612.
The probability being a man is: 4.1602207797648725e-11
calculating mu and sigma of height:
The mu is 162.857143 and the sigma is 9.063270.
calculating mu and sigma of weight:
The mu is 55.571429 and the sigma is 8.866738.
calculating mu and sigma of age:
The mu is 30.000000 and the sigma is 1.527525.
probability being a women is : 1.7913603462786618e-07
So we can predict that is a: woman
```

All the results used in the homework could be calculated in the program.