Program Assignment2

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# **Ex-1**

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| Source code |
| import numpy as np  weight = np.random.random(100)\*50+40  height = np.random.random(100)\*60+140  bmi = weight / (height\*height\*0.0001)  for i in range(10):  print("Student{0} bmi is {1}".format( i+1, bmi[i] )) |

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| Result Screen |
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# **Ex-2. Numpy Exercise2(Box plot)-height**

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| Source code |
| import numpy as np  import matplotlib.pyplot as plt  weight = np.random.random(100)\*50+40  height = np.random.random(100)\*60+140  bmi = weight / (height\*height\*0.0001)  underweight = []  healthy = []  overweight = []  obese = []  for i in range(100):  if bmi[i] < 18.5:  underweight.append(height[i])  elif 18.5 <= bmi[i] < 25:  healthy.append(height[i])  elif 25 <= bmi[i] < 30:  overweight.append(height[i])  elif 30 <= bmi[i]:  obese.append(height[i])  plotData = [underweight, healthy, overweight, obese]  plt.title('BMI for 100 student')  plt.ylabel('Height')  plt.boxplot(plotData)  plt.show() |

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| Result screen |
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# **Ex-2. Numpy Exercise2(Box plot)-weight**

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| Source code |
| import numpy as np  import matplotlib.pyplot as plt  weight = np.random.random(100)\*50+40  height = np.random.random(100)\*60+140  bmi = weight / (height\*height\*0.0001)  underweight = []  healthy = []  overweight = []  obese = []  for i in range(100):  if bmi[i] < 18.5:  underweight.append(weight[i])  elif 18.5 <= bmi[i] < 25:  healthy.append(weight[i])  elif 25 <= bmi[i] < 30:  overweight.append(weight[i])  elif 30 <= bmi[i]:  obese.append(weight[i])  plotData = [underweight, healthy, overweight, obese]  plt.title('BMI for 100 student')  plt.ylabel('Weight')  plt.boxplot(plotData)  plt.show() |

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| Result Screen |
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# **Ex-2. Numpy Exercise3(Histogram)**

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| Source code |
| import numpy as np  import matplotlib.pyplot as plt  weight = np.random.random(100)\*50+40  height = np.random.random(100)\*60+140  bmi = weight / (height\*height\*0.0001)  data=[]  for i in range(100):  if bmi[i] < 18.5:  data.append(5)  elif 18.5 <= bmi[i] < 25:  data.append(15)  elif 25 <= bmi[i] < 30:  data.append(25)  elif 30 <= bmi[i]:  data.append(35)    name = ['underweight', 'healthy', 'overweight', 'obese']  plt.hist(data, bins=[0,10,20,30,40], rwidth=0.8)  plt.xticks([5,15,25,35], name)  plt.title('BMI for 100 student')  plt.xlabel("BMI status")  plt.ylabel("Number of students")  plt.show() |

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| Result Screen |
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# **Ex-2. Numpy Exercise4(Pie Chart)**

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| Source code |
| import numpy as np  import matplotlib.pyplot as plt  weight = np.random.random(100)\*50+40  height = np.random.random(100)\*60+140  bmi = weight / (height\*height\*0.0001)  underweight = []  healthy = []  overweight = []  obese = []  for i in bmi:  if i < 18.5:  underweight.append(i)  elif 18.5 <= i < 25:  healthy.append(i)  elif 25 <= i < 30:  overweight.append(i)  elif 30 <= i:  obese.append(i)  size=[]  size.append(len(underweight))  size.append(len(healthy))  size.append(len(overweight))  size.append(len(obese))  group = ['Under weight', 'Healthy', 'Over weight', 'Obese']  plt.pie(size, labels = group, autopct = '%.1f%%')  plt.title('BMI for 100 student')  plt.legend(fontsize=6)  plt.show() |

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| Result Screen |
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# **Ex-2. Numpy Exercise5(Scatter Plot)**

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| Source code |
| import numpy as np  import matplotlib.pyplot as plt  weight = np.random.random(100)\*50+40  height = np.random.random(100)\*60+140  bmi = weight / (height\*height\*0.0001)    plt.scatter(height, weight, color='r')  plt.xlabel("Height")  plt.ylabel("Weight")  plt.title('Scatter')  plt.show() |

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| Result Screen |
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