

Answers for Session 5

Q 1. Download [surveys.csv](#) from moodle.kent.ac.uk, answer the following questions, respectively

(a) Are there any missing values in the file? If so, which variables include missing values?

(b) Are there any outliers within the first 5 rows? Write a Python program to show which one includes an outlier

(c) Write a Python program to delete the rows with missing values. How can you confirm whether you have successfully dropped the missing values?

(d) Are there any duplicates? Write a Python program to confirm it

(e) Based on the data from part (c), write a Python program to remove the duplicate

Q 2. Write a Python function to calculate $f(x) = 1 - e^{-\left(\frac{x}{\alpha}\right)^\beta}$.

Q 3. Write a Python function to calculate $y = \sum_{i=0}^n i^{1.5}$.

Q 4. Download [weight-height.csv](#) from Moodle and read it into Python.

- Write a Python program to calculate the body mass index (BMI), which is $BMI = \frac{m}{h^2}$, where m is one's body mass (in kilograms) and h is his/her height (in meters). Add BMI and a new variable yourHealthCondition with the following values¹ as two new columns into the file and write them back to a new csv-formatted file named [Weight-height-BMI.csv](#).

- ✓ If BMI <18.5, then yourHealthCondition = "you're in the underweight range."
- ✓ If BMI >=18.5 and BMI <25, then yourHealthCondition = "you're in the healthy weight range."
- ✓ If BMI >=25 and BMI <30, yourHealthCondition = "you're in the overweight range."
- ✓ If BMI >=30 and BMI <40, yourHealthCondition = "you're in the obese range."
- ✓ If BMI >=40, yourHealthCondition = "you're in the over obese range."

Please note, the unit of height is inch and that of weight in the current file is pound. 1 inch= 0.0254 meters and 1 pound= 0.453592 kilograms. You will therefore need to convert them to meters and kilograms, respectively.

¹ <https://www.nhs.uk/common-health-questions/lifestyle/what-is-the-body-mass-index-bmi/>

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Assume the file is downloaded and saved in [c:\wutemp\python](#) with file name wight-height.csv