

## Data Science Laboratory 1

## Lab 5 Problem Sheet

1. Classify the following attributes as binary, discrete or continuous. Further, classify them as qualitative (nominal or ordinal) or quantitative (interval or ratio). Some cases may have more than one interpretation, so briefly indicate your reasoning if you think there may be some ambiguity.
  - (a) Age in years. **discrete, quantitative, interval** ✓
  - (b) Time in terms of AM or PM. **binary, qualitative, nominal**
  - (c) Brightness as measured by a light meter. **continuous, quantitative, ratio**
  - (d) Brightness as measured by people's judgements. **qualitative, ordinal**
  - (e) Angles as measured in degrees between 0 and 360. **continuous, quantitative, ratio**
  - (f) Bronze, Silver and Gold medals as awarded at the Olympics. **binary, qualitative, ordinal**
  - (g) Height above sea level. **continuous quantitative, ratio** ✓
  - (h) Number of patients in a hospital. **discrete, quantitative, interval**
  - (i) ISBN numbers for books. **discrete, qualitative, nominal** ✓
  - (j) Ability to pass light in terms of the following values: opaque, translucent, transparent. **binary, qualitative, interval** ✓
  - (k) Military rank. **binary, qualitative, ordinal**
  - (l) Distance from the centre of campus. **continuous, quantitative, ratio** ✓
  - (m) Density of a substance in grams per cubic centimetre. **continuous, quantitative, ratio**

2. Compute the mean, median and mode for the following statistics:

Name of Dam	Height (in ft)
Oroville Dam	756
Hoover Dam	726
Glen Canyon Dam	710
Don Pedro Dam	568
Hungry Horse Dam	564
Round Butte Dam	440
Pine Flat Lake Dam	440

**Mean = 601ft** ✓  
**Median = 568ft** ✓  
**Mode = 440ft** ✓  
**IQR = 216ft** ✓  
**Variance = 15119ft** ✓  
**Standard deviation = 123ft** ✓

Then, compute the IQR, variance and standard deviation.

3. Find the median of the following list:

42, 48, 24, 25, 42, 28, 31, 33, 51, 57, 68, 33, 75, 36, 79, 85, 79

Then compute the IQR, AAD, MAD, variance and standard deviation.

Median = 49

IQR = 35

AAD = 17.6

MAD = 18.2

Variance = 409

Standard deviation = 20

