Assignment 1

anonymous

1 General information

2 Basic probability theory notation and terms

Write your answers here!

3 Basic computer skills

Do some setup here. Explain in text what you do.

```
# Do some setup:
distribution_mean = .2
distribution_variance = .01

# You have to compute the parameters below from the given mean and variance
# distribution_alpha = ...
# distribution_beta = ...
```

3.0.1 (a)

Plot the PDF here. Explain in text what you do.

```
# Useful functions: seq(), plot() and dbeta()
```

3.0.2 (b)

Sample and plot the histogram here. Explain in text what you do.

```
# Useful functions: rbeta() and hist()
```

3.0.3 (c)

Compute the sample mean and variance here. Explain in text what you do.

```
# Useful functions: mean() and var()
```

3.0.4 (d)

Compute the central interval here. Explain in text what you do.

```
# Useful functions: quantile()
```

4 Bayes' theorem 1

4.0.1 (a)

Compute the quantities needed to justify your recommendation here. Explain in text what you do.

```
# You can do the computation with pen and paper or in R.
# Either way, you have to explain why you compute what you compute.
```

5 Bayes' theorem 2

You will need to change the numbers to the numbers in the exercise.

```
boxes_test <- matrix(c(2,2,1,5,5,1), ncol = 2,
    dimnames = list(c("A", "B", "C"), c("red", "white")))
```

5.0.1 (a)

Keep the below name and format for the function to work with `markmyassignment`:

```
p_red <- function(boxes) {
    # Do computation here, and return as below.
    # This is the correct return value for the test data provided above.
    0.3928571
}
```

5.0.2 (b)

Keep the below name and format for the function to work with `markmyassignment`:

```
p_box <- function(boxes) {
    # Do computation here, and return as below.
    # This is the correct return value for the test data provided above.
    c(0.29090909,0.07272727,0.63636364)
}
```

6 Bayes' theorem 3

6.0.1 (a)

You will need to change the numbers to the numbers in the exercise.

```
fraternal_prob = 1/125
identical_prob = 1/300
```

Keep the below name and format for the function to work with `markmyassignment`:

```
p_identical_twin <- function(fraternal_prob, identical_prob) {
    # Do computation here, and return as below.
    # This is the correct return value for the test data provided above.
    0.4545455
}
```

7 The three steps of Bayesian data analysis

7.0.1 (a)