Project 1 Checkpoint

Collaborators: Zanesha Chowdhury (zaneshac@umich.edu - 10440553), Nada El-Fakharany (nelfakh@umich.edu - 50265025), and Sabyena Ahmed (sabyena@umich.edu - 49944985)

Dataset: Penguins

Columns (Zanesha):
- species
- flipper_length_mm
- body_mass_g

Columns (Nada):
- Species
- Island
- bill_length_mm

Columns (Sabyena):
- sex
- year
- island

Calculations (Zanesha):
- What is the average body mass of the Adelie species?
  - avg_body_mass_Adelie
- What is the correlation between body mass and flipper length?
  - body_mass_flipper_len_corr

Calculations (Nada):
- largest_bill_length
  - Which species holds the largest bill length average?
- dream_island_species
  - Which species is most prominent on Dream Island?

Calculations (Sabyena):
- What's the male-to-female ratio for the Gentoo species?
  - gentoo_sexes
- What year had the most information collected about Chinstrap penguins?
  - info_year_chinstrap

Function Decomposition:

```
main()
Runs the program and
calls the functions in
sequential order
INPUT: none
OUTPUT: None
```

```
load_penguins(csv_file)
Read in csv file and transform into
Python data structures
INPUT: csv_file(string)
OUTPUT: penguin(list of
dictionaries)
```

```
species
```

avg_body_mass_Adelie
This will find the average body mass of the Adelie
species
INPUT: species(list of dicts)
OUTPUT: averages

Get_species_body_mass_flipper_len
Creates a list of species. body
masses, and flipper length

INPUT: penguins
OUTPUT: species, body mass, and
flipper length

Body_mass_flipper_len_ratio
This will find out how the body mass correlates to flipper length
INPUT: body mass (list of dicts) and flipper length (list of dicts)
OUTPUT: how those two relate

get_n_list
Creates a list of species, bill
length, and island
INPUT: penguins
OUTPUT: species, bill length,
and island

Largest_bill_length
This will find the species that holds the largest bill length average
INPUT: 2 nested dicts (species and bill length)
OUTPUT: average bill length number

Dream_island_species
This will find the most prominent species on Dream Island
INPUT: 2 nested dicts (species, island)
OUTPUT: most prominent species on Dream Island

Gentoo_sexes
This will find the ratio/percentages of males and females for the Gentoo species.
INPUT: Gentoo sex statistics (list)
OUTPUT: The percentages of males and females for the Gentoo species.

get_penguin_infos
Creates a list of species, sex,
year for chinstraps.
INPUT: penguins
OUTPUT: species, sex, and
year for chinstraps.

Info_year_chinstrap
This will find the year with the most information about Chinstrap penguins.
INPUT: Chinstrap year collection list.
OUTPUT: What year has the most information about Chinstrap penguins.