

## ENSF 592 Spring 2021 – Assignment 5 Grading

### Assignment 5 Rubric (35 marks, 10% of overall grade)

Your code must successfully compile to be graded. Code that does not compile will be given a grade of zero. For compiled code, partial marks may be given for each criterion listed below.

#### Commenting and Syntax (6 marks):

- (1) Your name must be included in the file header
- (1) Comments must be included throughout the code to explain the functionality
- (2) All classes, methods, and functions are fully documented using docstrings (including summary, parameters, and return values)
- (1) All variables and functions have clear and useful names that use lowercase words separated by an underscore, all classes have CamelCase names
- (1) Code is clearly indented and spaces are included between variables and operators
- One mark will be deducted for each error or missing component, up to a maximum of 6 marks

#### Code Structure and Semantics (8 marks):

- (3) Solution contains at least one multi-index Pandas DataFrame (indices must be UN Region -> UN Sub-Region -> Country)
- (1) Solution contains at least IndexSlice
- (1) Solution contains a user-defined function named `find_null` that is used to find missing sq km data values
- (1) Solution contains at least one masking operation
- (1) Solution contains at least one built-in Pandas or Numpy computational method (e.g. max, mean, etc.)
- (1) No global variables are used
- One mark will be deducted for each error or missing component, up to a maximum of 8 marks

#### User Interface and Functionality (8 marks):

- (1) User is given clear guidance on how to enter the input values
- (1) Program accepts a string for the sub-region name
- (1) If an invalid name is provided, a ValueError exception is used to prompt for re-entry without terminating the program
- (1) The data is imported and not copy/pasted
- (1) No values are hard-coded except for Excel column names
- (1) Clear headers are used to separate each requested printout
- (1) All data is presented in the correctly sorted order
- (1) Excel file has not been sorted or altered in any way, before or after the program is executed
- One mark will be deducted for each error or missing component, up to a maximum of 4 marks

#### Execution (13 marks):

- Example test screenshots are provided in the repository and may be used as an output template
- (3) Provide a screenshot of successful execution. Your screenshot should include all specified functionality:
  - 1) handling incorrect input
  - 2) returning the correct results when a valid name is input and sq km values are missing
  - 3) returning the correct results when a valid name is input and no values are missing

- Your program will be executed to test the following cases:
- (1) Correctly handles incorrect input (e.g. "Atlantis") by allowing the user to re-enter their input
- Returns the correct results when a valid name is input and sq km values are missing (e.g. "Northern Africa"):
  - (1) Prints the Region/Sub-Region/Country/Sq Km of the affected countries
- Returns the correct results when a valid name is input and no values are missing (e.g. "Melanesia"):
  - (1) "There are no missing sq km values for this sub-region"
- For any valid sub-region:
  - (3) New columns for delta population and density printed with all data in correct order
  - (2) Threatened species in each country printed in correct order
  - (2) Calculated sq km per area per number of threatened species printed in correct order
- All students will have their code tested with the same input values
- One mark will be deducted for each error or missing component, up to a maximum of 14 marks