Name : A.Tanase

Total score: 47/50

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| Section | Available marks | Marking breakdown | Total Score |
| A1 : Input and Output: Data Frames | 5 | 1 mark : import pandas  1 mark : create a data frame  1 mark : select shrubs  1 mark : create a data set that excludes trees  1 mark : reset the index column | 5 |
| A2 : Functions | 5 | # 1 mark : correctly define a function using def  # 1 mark : docstring  # 2 mark : correct use of equations to convert lat (1 mark) and lon (1 mark)  # 1 mark : apply function to dataframe | 4 |
| A3 : Functions and data structures : Boolean indexing | 5 | # 1 mark : correctly define a function using def  # 1 mark : docstring  # 1 mark : h has default value 0.5 either in function arguments or within function  # 1 mark : h is default argument with val 0.5  # 1 mark : function applied to data set : removes plants with height < 50cm | 4 |
| B1 : Input and Output | 2 | # 1 mark : create a data frame  # 1 mark : import correct values | 2 |
| B2 : Functions | 2 | # 1 mark : apply function from earlier to new dataframe  # 1 mark : correct conversion of units | 2 |
| B3 : Functions and mathematical operators. | 5 | # 1 mark : correct location of origin  # 1 mark : correctly define a function using def and return  # 1 mark : correct use of equations to scale coordinates to 0 to 3000  # 1 mark : use floor division to get 15x15 grid ref  # 1 mark : apply function and insert new columns to pH data frame | 5 |
| B4 : numpy multi-dimensional arrays. | 2 | # 1 mark : correctly calculate the mean pH for each grid location  # 1 mark : store each mean reading in a Numpy array | 2 |
| B5 : Plotting | 3 | # 1 mark : create a colour map or 3D plot  # 1 mark : correctly plot pH  # 1 mark : 0 to 14 axis labels | 3 |
| C1 : Mathematical compuation with Numpy | 5 | # 1 mark : apply vector quantisation algorithm to find closeness to each species  # 1 mark : find smallest magnitude  # 1 mark : choose plant based on smallest magnitude  # 1 mark : correct plants identified  # 1 mark : Add new column called species to data frame | 5 |
| C2 : Functions | 1 | # 1 mark : apply function and insert new columns to plants data frame | 0 |
| C3 : Data Structures : Lists | 5 | # 1 mark : create an empty list for each field  # 1 mark : loop through each grid cell  # 1 mark : store the x and y grid reference and average pH  # 1 mark : store the number of plants of each species in the grid cell  # 1 mark : Make a list of lists | 5 |
| D1 : Control Flow | 5 | # 1 mark : create a nested list structure  # 2 marks : loop through each plant survey in the folder  # 2 marks : run all preceding steps for each year of the plant survey | 5 |
| D2 : Plotting and curve fitting | 5 | # 1 mark : Identify points close to and far from an industrial site selected index  # 1 mark : Extract a single data point from each year at the selected index  # 1 mark : plot each data series against time  # 1 mark : fit a trend line to each data series  # 1 mark : Show the equation of the trendline and the proximity to an industrial site as labels. | 5 |
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