Tyler Elvis 2/18/24 ENG 108, Lab Ace Data

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Ace Data

```
clc, clear
format short, format compact
```

Instructions

```
%Download the datafile ace_data_5th.dat to the current folder for Lab 4.
%Load the ace_data_5th.dat file into the script for Lab 4.
%Extract the data from each column, into individual arrays. You should have
arrays named. Suppress the data from being displayed.
%years
% %ace
%tropical_storms
%hurricanes
%major_hurricanes

%Use the max function to determine which year had the highest
%ACE value
%Number of tropical storms
%Number of hurricanes
%Number of major hurricanes

%Determine the mean and the median values for each column in the array,
except for the year.

%Use the sortrows function to rearrange the ace_data array based on the ACE
value, sorted from high to low.
```

Data Org

```
load ace_data_5th.dat;  %loads the data fom the .dat file

Data = ace_data_5th;    %creating a function for the loaded data
```

```
%Creats an aray for each col from the data set

    year = Data(:,1);
    ace = Data(:,2);
    tropical_storms = Data(:,3);
    hurricanes = Data(:,4);
    major_hurricanes = Data(:,5);
```

Highest value in each year

```
[values,rows] = max(ace,[],"all");  %finds the max value and row of the
variable
MAX_ACE_YEAR = year(rows,1,1);      % takes the rows value and outputs the
year
MAX_ACE = [values,MAX_ACE_YEAR];    % Puts both the year and max value into
one function
Table_Ace = table(MAX_ACE)          % displays the data in an table using
the table function

% Copy and paste and change the variables

    [values,rows] = max(tropical_storms,[],"all");
    MAX_YEAR = year(rows,1,1);
    MAX_Tropical_storms = [values,MAX_YEAR];
    Tropical_Storms_Table = table(MAX_Tropical_storms)

        [values,rows] = max(hurricanes,[],"all");
        MAX_YEAR = year(rows,1,1);
        Max_hurricanes = [values,MAX_YEAR];
        Hurricanes_Table = table(Max_hurricanes)

            [values,rows] = max(major_hurricanes,[],"all");
            MAX_YEAR = year(rows,1,1);
            Max_Major_hurricanes = [values,MAX_YEAR];
            Major_Hurricanes_Table = table(Max_Major_hurricanes)
```

```
Table_Ace =
  table
      MAX_ACE
    ___________
    248    2005
Tropical_Storms_Table =
  table
    MAX_Tropical_storms
    ___________________
        28    2005
Hurricanes_Table =
  table
    Max_hurricanes
    ______________
      15    2005
Major_Hurricanes_Table =
```

```
  table
    Max_Major_hurricanes
    ____________________
         8     1950
```

find the mean

```
Median_AND_MEAN_for_ACE = [(mean(ace)),(median(ace))] % creates the mean and
median by () to only do that action [] to output it all as one

    MEAN_AND_MEDIAN_FOR_TROPICAL_STORMS = [(mean(tropical_storms)),
(median(tropical_storms))]

        MEAN_AND_MEDIAN_FOR_HURICANES = [(mean(hurricanes)),
(median(hurricanes))]

            MEAN_AND_MEDIAN_FOR_MAJOR_HURICANES = [(mean(major_hurricanes)),
(median(major_hurricanes))]
```

```
Median_AND_MEAN_for_ACE =
  101.1343   88.0000
MEAN_AND_MEDIAN_FOR_TROPICAL_STORMS =
   10.8955   11.0000
MEAN_AND_MEDIAN_FOR_HURICANES =
    6.2090    6.0000
MEAN_AND_MEDIAN_FOR_MAJOR_HURICANES =
    2.6567    2.0000
```

sort rows

```
Rows_SORTED = sortrows(Data,2,"descend"); % sorts the ace row from
descending order
Table = table(Rows_SORTED)
```

```
Table =
  67×1 table
               Rows_SORTED
    ___________________________________
    2005     248      28      15       7
    1950     243      13      11       8
    1995     228      19      11       5
    2004     225      14       9       6
    1961     205      11       8       7
    1955     199      12       9       6
    1998     182      14      10       3
    1999     177      12       8       5
    2003     175      16       7       3
    1964     170      12       6       6
    1996     166      13       9       6
    2010     165      19      12       5
    1969     158      17      12       5
    1980     147      11       9       2
    1966     145      11       7       3
```

2008	145	16	8	5
1951	137	10	8	5
1989	135	11	7	2
2012	133	19	10	2
2011	126	19	7	4
1967	122	8	6	1
1958	121	10	7	5
1963	118	9	7	2
2000	116	14	8	3
1954	113	11	8	2
2016	112	14	6	2
2001	106	15	9	4
1953	104	14	6	4
1988	103	12	5	3
1971	97	13	6	1
1981	93	11	7	3
1979	91	8	5	2
1990	91	14	8	1
1960	88	7	4	2
1985	88	11	7	3
1952	87	7	6	3
1957	84	8	3	2
1965	84	6	4	1
1976	81	8	6	2
2006	79	10	5	2
1959	77	11	7	2
1992	75	6	4	1
1975	73	8	6	3
2007	72	15	6	2
1984	71	12	5	1
2014	67	8	6	2
2002	65	12	4	2
2015	63	11	4	2
1978	62	11	5	2
1974	61	7	4	2
1956	54	8	4	2
2009	51	9	3	2
1973	43	7	4	1
1997	40	7	3	1
1993	39	8	4	1
1962	36	5	3	1
1986	36	6	4	0
2013	36	14	2	0
1968	35	7	4	0
1970	34	10	5	2
1987	34	7	3	1
1991	34	8	4	2
1994	32	7	3	0
1982	29	5	2	1
1972	28	4	3	0
1977	25	6	5	1
1983	17	4	3	1

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