

CS 115 Final Exam

Spring 2019 – 2020

Date: Friday May 29, 2020. 14:40 – 16:50

Duration: 130 minutes.

NOTE: You may only use functionality discussed in CS115. Read the questions carefully and do only what is asked.

```
int() / float() / str()
input( message )
print( string, end = string )
range( start, stop, step )
```

String

```
len( obj )
format( value_list )
find( string )
index( element )
strip()
split( delimiter )
```

List

```
append( element )
extend( sequence )
insert( index, element )
pop( index )
remove( element )
index( element )
reverse()
count()
sort()
sorted( list )
```

Dictionary

```
pop( key )
```

Files

```
open( filename, mode )
write( string )
read()
readline()
readlines()
close()
```

Numpy

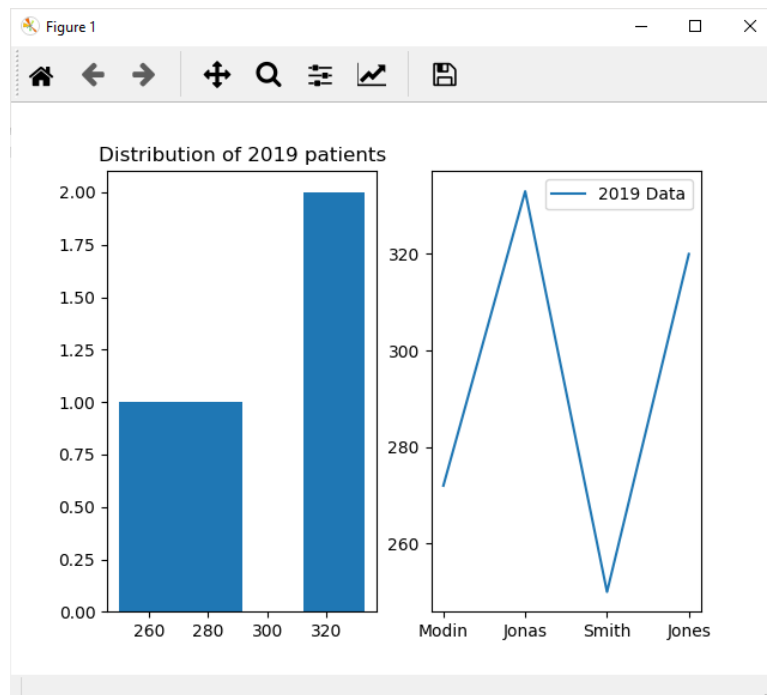
```
array()
arange()
zeros()
ones()
linspace()
loadtxt()
savetxt()
where()
random.rand()
random.randint()
```

Matplotlib

```
plot()
pie()
bar()
hist()
subplot()
axis()
title()
xlabel()
ylabel()
grid()
legend()
```

Question 1 (40 pts.)

- Download the files `doctor.txt` and `patient.txt`. The data in these files is parallel, meaning that each row in the patients file is related to the doctor in the same row from the doctors file.
- Download the script `Final_Q1_Yourname.py`, and change the name to include your name.
- Read the comments in the script** and according to the instructions given, complete the script.
- In the script, `Final_Q1_Yourname.py`, create the plots shown in the figure window below according to the following:
 - The histogram shows frequencies of the number of patients in 2019, with 4 bins.
 - The plot shows doctor names versus the number of patients in 2019



- Upload your solution to Moodle when finished. Check your file carefully before you upload and make sure you upload the correct file.

Sample Run:

Total number of patients in 2019 = 1175.0

Doctor with highest Number of Patients = Jonas

Question 2 (60 pts.)

Download the classes `Location` and `Event`. Update the classes using the following information and complete the script described below.

- **Note: ONLY do what is asked. Do not add extra methods or update existing methods except where specified.**
 - You should always use the appropriate methods when available, points will be deducted if you do not. You should not duplicate functionality.
- a) Update class `Location` according to the following:
- Implement the `__init__` method that initializes the `__location_name` and `__city` to values passed as parameters. All `Location` attributes must be private.
 - Implement the `__lt__` method. A `Location` is less than another if its city (string) is less than the other. If the city is the same, the `Location` is less than the other if the `location_name` (string) is less than the other.
 - Implement the `__eq__` method. Two `Locations` are equal if their city and location name are the same.
- b) Update class `Event` according to the following:
- Add a class attribute, `__ticketFee` and initialize to 25. The ticket fee is the same for all `Events`.
 - Implement the `__init__` method. All `Events` have the attributes: `__event_name`, `__price`, `__date`, `__location`, and `__active` (indicates if an event is active or not) Initialize the `__event_name`, `__price`, `__date`, `__location` (type: `Location`) using the values passed as parameters. All `Events` are active by default, so initialize `__active` to `True`. All `Event` attributes must be private.
 - Implement a method, `get_month()`, which returns the integer month of the `Event`. You may assume that the date is stored with a slash (/) separating the day and the month (ex: 5/12 -> returns 12)
 - Implement a method, `get_location()` which returns the `location` of the `Event`.
 - Implement a method, `calculate_ticket_price()` which returns the ticket price including the ticket fee. For `Events` in Istanbul, add the full ticket fee to the ticket price, for all other events add 75% of the ticket fee to the ticket price.
 - Implement the `__lt__` method. An `Event` is less than another if its `Location` is less. If the `Location` is the same, it compares the `price` (lower price is less).
- c) Download the sample file `biletix.txt`. Although the data in the file may change, you may assume that each line in the file contains information about an `Event` with the following format:
- ```
EventName;Date;LocationName;City;TicketPrice
```
- d) Download the script, `Final_Q2_Yourname.py` Update the name of the script to include your name.
- e) Complete the script by reading the comments and following the instructions given.
- £) Upload `Location.py`, `Event.py`, `Final_Q2_Yourname.py` to Moodle when finished. Be sure to check the files before uploading and upload the correct files.

## Sample Run:

```
[Antonius ile Kleopatra 24/1 (74.75TL): Ankara Devlet Tiyatrosu Sinasi Sahnesi - Ankara
, Antonius ile Kleopatra 25/2 (74.75TL): Ankara Devlet Tiyatrosu Sinasi Sahnesi - Ankara
, Antonius ile Kleopatra 24/10 (74.75TL): Ankara Devlet Tiyatrosu Sinasi Sahnesi - Ankara
, Zorba 11/5 (48.75TL): Congressium - Ankara
, Tarkan 7/6 (518.75TL): Kentpark AVM - Ankara
, Troya 7/5 (108.75TL): Aspendos Arena - Antalya
, Troya 28/5 (108.75TL): Aspendos Arena - Antalya
, Iron Maiden 26/7 (245.0TL): BJK Inonu Stadyumu - Istanbul
, 13. Istanbul Bienali 10/11 (65.0TL): Binenal Mekanlari - Istanbul
, Paco de Lucia 30/10 (99.0TL): CRR Konser Salonu - Istanbul
, Roger Waters: The Wall 4/8 (175.0TL): ITU Stadyumu - Istanbul
, Yalnizlar Kulubu 3/3 (59.0TL): Ikinci Kat - Istanbul
, Zaz 15/6 (95.0TL): KucukCiftlik Park - Istanbul
, Joe Satriani World Tour 18/1 (114.0TL): KucukCiftlik Park - Istanbul
, Depeche Mode 17/5 (163.0TL): KucukCiftlik Park - Istanbul
, Andrey Triana 25/5 (325.0TL): KucukCiftlik Park - Istanbul
, Pitbull 14/10 (125.0TL): Life Park - Istanbul
, Yasar Ne Yasar Ne Yasamaz 9/1 (53.0TL): Metin Zakoglu Cafe Theatre - Istanbul
, Placebo 16/12 (125.0TL): Parkorman - Istanbul
, Bloc Party 25/5 (125.0TL): Parkorman - Istanbul
, Ben Bertolt Brecht 5/9 (50.0TL): Sisli Belediyesi Kent Kultur Merkezi - Istanbul
, Karanlik Korkusu 10/11 (55.0TL): Studio Oyunculari Sahnesi - Istanbul
, Karsilasmalar 6/9 (55.0TL): garajistanbul - Istanbul
, Group Bajar 24/10 (52.75TL): Bornova Acikhava Tiyatrosu - Izmir
]

[**CANCELLED** Antonius ile Kleopatra 24/1 (74.75TL): Ankara Devlet Tiyatrosu Sinasi Sahnesi - Ankara
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, Paco de Lucia 30/10 (99.0TL): CRR Konser Salonu - Istanbul
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, Group Bajar 24/10 (52.75TL): Bornova Acikhava Tiyatrosu - Izmir
]

Enter city to search: Izmir

Enter name of location to search: Bornova Acikhava Tiyatrosu
Active Events at : Bornova Acikhava Tiyatrosu - Izmir
Group Bajar 24/10 (52.75TL): Bornova Acikhava Tiyatrosu - Izmir

Enter city to search: Antalya

Enter name of venue to search: Aspendos Arena
Active Events at : Aspendos Arena - Antalya
No Events Found
```