

## **BBI Programming Challenge – December 2020**

### **Coding Instructions:**

1. For **Questions 1 and 2**, code can be written in any programming language (Preferably Java, Python, C or C++) and for **Question 3**, only SQL should be used.
2. Code needs to be properly commented. Incomplete or partially commented code will not be evaluated.
3. The solution along with the original code and screenshots of the results has to be shared to the email ID mentioned herein : **recruiting@bbinsight.com**
4. Preference will be given to those programs that have better performance, follow universal coding standards and are submitted before the deadline.

### **Question 1 – Date to Epoch timestamp**

#### **Question 1:**

Convert the human readable date to epoch timestamp/time as on the start of the day?

#### **Example.**

If the INPUT date is 21-01-2020, print the epoch time at the start of the day i.e 12:00 AM

#### **Conditions:**

Date limit: 01-01-1970 to <the date of execution of the test cases>

#### **Input Description:**

The input date will be in any of the following format.

- 1) dd/mm/yyyy
- 2) mm/dd/yyyy
- 3) dd-mm-yyyy
- 4) mm-dd-yyyy
- 5) dd.mm.yyyy
- 6) mm.dd.yyyy
- 7) ddmmYYYY
- 8) mmddYYYY

#### **Output Description:**

For all the types of above input date, the output should be an Epoch timestamp/time.

#### **Exceptions:**

Any input date other than the given formats must be handled and a message "Unable to convert the provided date" must be printed.

**More Examples:****Example 1****Input:** 19-01-2020**Output:** 1579392000**Example 2****Input:** 31122012**Output:** 1356912000**Example 3****Input:** 251220202**Output:** Unable to convert the provided date**Example 4****Input:** 17:04:2020**Output:** Unable to convert the provided date**Question 2 – Floating Point Numbers – Print Filtered Data****Question 2:**

We wish to train a machine learning algorithm on an array of floating-point numbers in the interval  $[0.0, 1.0)$ . The data is not evenly distributed, and we wish to filter the dataset to obtain a subset containing an equal number of values from each interval  $[0, 0.2)$ ,  $[0.2, 0.4)$ , ...  $[0.8, 1.0)$ , throwing away as little data as possible.

Write a program which reads comma-separated floating-point numbers in a single line from stdin and prints the filtered data to stdout in the same format

Note: Solve this in linear time.

**Examples:****Example 1****Input:** 0.1,0.3,0.5,0.7,0.9**Output:** 0.1,0.3,0.5,0.7,0.9**Example 2****Input:** 0.1,0.3,0.5,0.7,0.9,0.5**Output:** 0.1,0.3,0.5,0.7,0.9

### Example 3

**Input:** 0.15,0.12,0.35,0.38,0.55,0.56,0.57,0.75,0.77,0.9,0.94

**Output:** 0.15,0.12,0.35,0.38,0.55,0.56,0.75,0.77,0.9,0.94

### Example 4

**Input:** 0.11,0.12,0.13,0.23,0.34,0.35,0.47,0.59,0.77,0.83,0.85,0.91,0.95

On classifying the above input data from example 4, Subset in each interval will look as below:

Interval	Data
[0 - 0.2)	0.11,0.12,0.13
[0.2 - 0.4)	0.23,0.34,0.35
[0.4 - 0.6)	0.47,0.59
[0.6 - 0.8)	0.77
[0.8 - 1.0)	0.83,0.85,0.91,0.95

Since the interval [0.6 - 0.8) has the minimum subset of size 1. We choose 1 element from the rest of the intervals.

**Output:** 0.11,0.23,0.47,0.77,0.83

*\*if the interval [0.6 - 0.8) had more than 3 elements then we would choose 2 elements from all subset, since the interval with minimum subset would be [0.4 - 0.6) and of size 2.*

## Question 3 – SQL – Passenger & Price

### Question 3:

Write SQL queries for the following scenarios and retrieve required information from the "MySql" database tables "**Passenger**" & "**Price**"

1. How many Female and how many male passengers travelled for a minimum distance of **600 KM s**?
2. Find the **minimum** ticket price for **AC** compartment
3. Select passenger names whose names start with character '**S**'
4. Calculate **price charged** for each passenger displaying Passenger name, Boarding station, Destination station, Compartment, Price in the output
5. What is the passenger name and his/her ticket price who travelled in **Non-AC compartment** for a distance of **1000 KM s**
6. Linda Travelled from Mumbai to Goa, if she had travelled from Mumbai to Chennai calculate how much **extra cost** does she need to pay (distance should not be hardcoded in the query)
7. What will be the AC and Non-AC charge for **Tina** to travel from **Bangalore to Goa**?
8. List the distances from "**Passenger**" table which are unique (non-repeated distances)

9. Display the passenger name and percentage of distance travelled by that passenger from the total distance travelled by all passengers without using user variables
10. How many times did **character 'a'** appear in the column passenger name of "**Passenger**" table

### Database Connection details

MySQL Database connection details	
Server Address/Host Name	<b>dbi-bc2020.cok3fwhxp8bt.us-west-2.rds.amazonaws.com</b>
Port	<b>3306</b>
DB Name (Database Name)	<b>travel</b>

User id	<b>bcuser</b>
Password	<b>GajiNi1i</b>

### Database Tables:

Here are 2 Tables '**Passenger**' and '**Price**' which have the travel details of passengers and the relative price.

#### 1. '**Passenger**' database table *reference*

Passenger_ Name	Category	Gender	Boarding_ Station	Destination_ Station	Distance	Compartment
Sam	General	M	Chennai	Bangalore	350	AC
Charlie	Tatkal	M	Hyderabad	Mumbai	700	Non-AC
Tina	General	F	Bangalore	Goa	600	AC
Carl	General	M	Mumbai	Chennai	1500	AC
Sarah	Tatkal	F	Goa	Trivandrum	1000	AC
John	General	M	Hyderabad	Nagpur	500	Non-AC
Linda	Tatkal	F	Mumbai	Goa	700	AC
Mike	Tatkal	M	Bangalore	Hyderabad	500	Non-AC
Chris	General	M	Nagpur	Pune	700	Non-AC

## 2. 'Price' database table *reference*

Compartment	Distance	Price
AC	350	770
AC	500	1100
AC	600	1320
AC	700	1540
AC	1000	2200
AC	1200	2640
AC	1500	3300
Non-AC	350	434
Non-AC	500	620
Non-AC	600	744
Non-AC	700	868
Non-AC	1000	1240
Non-AC	1200	1488
Non-AC	1500	1860

***If you need any further information, please feel free to reach out to us at [recruiting@bbinsight.com](mailto:recruiting@bbinsight.com), Thank you!***