Program 3
CSCI 111 – Fall 2022

The Galileo Spacecraft

Galileo was an unmanned NASA spacecraft which studied the planet Jupiter and its moons, as well as several other solar system bodies. It was launched on October 18, 1989, and arrived at Jupiter on December 7, 1995, becoming the first spacecraft to orbit Jupiter[1]. For program 4, you will determine the number of burns required for the Galileo to reach any destination, most importantly Jupiter. Each burn sequence allows the spacecraft to travel 60% of the remaining distance to the final destination.

For example, if the initial distance is 50000 meters, the spacecraft would travel (50000*0.6), or 30000 meters, on the first burn with 20000 meters left to travel. On the second burn, the spacecraft would travel (20000*0.6), or 12000 meters, with 8000 meters left to travel.

Write a Java application that prompts for the distance to be traveled in **kilometers** (you will need to convert this to meters). Then, determine the number of burns required to reach the destination within **35 meters**. Output the burn number, how far the probe traveled for the burn, and the remaining distance to reach its destination.
You must use a **While loop** in your program.

Sample Output

```
Enter the distance to be traveled in kilometers: 50
Burn 1: Traveled 30000.00 meters
        20000.00 meters left
Burn 2: Traveled 12000.00 meters
        8000.00 meters left
Burn 3: Traveled 4800.00 meters
        3200.00 meters left
Burn 4: Traveled 1920.00 meters
        1280.00 meters left
Burn 5: Traveled 768.00 meters
        512.00 meters left
Burn 6: Traveled 307.20 meters
        204.80 meters left
Burn 7: Traveled 122.88 meters
        81.92 meters left
Burn 8: Traveled 49.15 meters
        32.77 meters left

You made it to Jupiter in 8 burns
>>
```

[1] http://en.wikipedia.org/wiki/Galileo_%28spacecraft%29

Now determine the actual number of burns required for your spacecraft to travel from Earth to Jupiter.
Note that the average distance from Earth to Jupiter is 778412028 million km.

Things to Note:

1. The burn and distance traveled and the “meters to go” should appear on two lines as shown in the sample output. Note that this print should be done **within** the while loop.
2. “meters to go” on the second line of the burn information should be lined up with “Traveled x meters” as shown in the Sample Output. To do this, you should use the tab escape sequence, **\t**
3. For the distances, prints only to ***two decimal places***.
4. If you ever get an infinite loop that keeps running, then press **Ctrl + C** in the command window to stop the execution.

Name your file **JupiterYourLastName.java**. Include header comments formatted exactly as show below. Be sure to include the Honor Code statement. Your electronic submission of the program file will represent your endorsement of the Honor Code Statement. Be sure to comment your code.

```
/* Course: CSCI 111, Section 1
   Student Name: Jane Doe
   Student ID: 12345678
   Program 3
   Due Date:

   In keeping with the Honor Code of UM, I have neither given nor received
   inappropriate assistance from anyone other than the TA or the instructor.

   Program Description:
*/
```