

Lab Assignment 8

2021 – 2022 Spring, CMPE 211 Fundamentals of Programming II

In this assignment, you have to implement:

An adaptive cruise control system “**public void adaptiveCruiseControlSpeed(int speed)**” on your previous project.

This system will keep people safe on the train road by increasing and decreasing the speed automatically.

The algorithm works as described below.

- If train speed > 200 then it will automatically work.
- If the train speed higher than the speed of the train ahead, the train's max speed will be automatically equalized with the train ahead.
- In this case our speed limit for the train has already been defined as 425 kmh.
- System will apply emergency brakes when the distance between trains is less than 50 kilometers and speed is higher than the front train.
- System will slow down train if the speed is higher than the other train and the distance is higher and equal than the 50 kilometers.

Expected Results:

Sample Run 1:

```
Engine is started!
Welcome to Train STAR21
Driver want to achieve 420 kmh speed
Let's check your speed If It is safe...
Limited Top Speed is: 425 kmh.
It is safe to drive at 420 speed!
Adaptive Cruise Control is active.
The front train speed is 100
The distance: 4. Emergency Braking is applying!
```

Sample Run 2:

```
Engine is started!
Welcome to Train STAR21
Driver want to achieve 420 kmh speed
Let's check your speed If It is safe...
Limited Top Speed is: 425 kmh.
It is safe to drive at 420 speed!
Adaptive Cruise Control is active.
The front train speed is 51
The distance: 33. Emergency Braking is applying!
```

Sample Run 3:

```
Engine is started!  
Welcome to Train STAR21  
Driver want to achieve 420 kmh speed  
Let's check your speed If It is safe...  
Limited Top Speed is: 425 kmh.  
It is safe to drive at 420 speed!  
Adaptive Cruise Control is active.  
The front train speed is 43  
The distance: 83. Train is slowing...
```

Sample Run 4:

```
Engine is started!  
Welcome to Train STAR21  
Driver want to achieve 420 kmh speed  
Let's check your speed If It is safe...  
Limited Top Speed is: 425 kmh.  
It is safe to drive at 420 speed!  
Adaptive Cruise Control is active.  
The front train speed is 87  
The distance: 108. Train is slowing...
```