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*Write Java code for the problem below.*

*Problem Statement*

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*I own two Electric cars with different specs. First car is a Tesla Model S, which is a sedan. The second car is a Mercedes-AMG, which is a convertible.*

*There should be a convertible specialization of the car that has means to move its roof up and down. There should be a print if the roof actually changes position.*

*First car*

*Model: Tesla Model S*

*Type: Sedan*

*Battery capacity: 100kWh*

*Color: White*

*Range of battery: 500 miles*

*The battery charger will offer 50 miles of range per hour of charging.*

*It takes 10 hours to Fully charge my battery.*

*Second car*

*Model: Mercedes-AMG convertible*

*Type: Convertible*

*Battery capacity: 80kWh*

*Color: Red*

*Range of battery: 300 miles*

*The battery charger will offer 25 miles of range per hour of charging.*

*It takes 12 hours to Fully charge my battery.*

*I drive from San Francisco to Las Vegas which is a driving distance of 570 miles. There’s a charging station every 50 miles along the way.*

*I need to plan the trip such that my battery charge never goes below 20%. I am allowed to charge at any charging station for a maximum of 2 hours.*

*The car’s instrument panel should have a feature to display the “Driving plan”.*

*Create a Driving plan for a round trip from San Francisco to Las Vegas, for both Model S and Mercedes-AMG. Drive the Mercedes with the roof open.*

*You are staying for 48 hours in Las Vegas and you don’t do any local driving within Las Vegas.*

*Assume that you start the trip with 100% charge in the battery.*

*Assume you are driving at a constant speed of 50mph.*

*Desired output*

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*Driving plan should display the following for every hour of driving:*

*Date/Time, Status, Miles travelled, Miles remaining to destination, Percentage of battery charge*

*For example the driving plan would look like this:*

*Car: Tesla Model S, 100kWh, White color*

*Beginning the trip at San Francisco at 1/1/2023 9:00*

*1/1/2023 10:00, Driving, 50 miles, 520 miles, 90%*

*1/1/2023 11:00, Driving, 50 miles, 470 miles, 80%*

*1/1/2023 12:00, Charging, 50 miles, 470 miles, 90%*

*1/1/2023 1:00, Driving, 50 miles, 420 miles, 80%*

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*Reached the destination Las Vegas at <Date/time>*

*Start the return trip back to San Francisco*

*1/1/2023 10:00, Driving, 50 miles, 520 miles, 90%*

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*Reached San Francisco at <Date/time>*

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