Research Candidate Assignment

Hello,
you are given this assignment to evaluate your skills as a data scientist.

The Assignment
Get Wheels business is to lease electrical bicycles. Customers order vehicles through the company's website and those orders are passed to external supplier which handles all the logistics.

The company has a single supplier which can handle any amount of rents, but he must be notified at 00:00, what will be the maximum rents of the following day, i.e., at 00:00 Get Wheels will set its maximum capacity for the next 24 hours. The supplier charges 10$ per vehicle and the company pays even the orders that didn't reach this maximum capacity.

The company has two types of customers; casual customers who pay 18$ per rent and registered who pay only 14$. Previous estimations show that rejecting a registered client order will cost 1$ per rejection (and 0$ for casuals). Assume that all customers, return the bicycle at the end of the day.

You are provided hourly bicycle rental data spanning two years. Each row contains the number of total rentals and other properties such as season and temperature.

Please create a program that decides:

● What maximum capacity to set for each day?

Please take the time to solve it, and provide:

● A short design document detailing what you did and why, which algorithms were used and what methods.
● Working code (can be written in jupyter notebook) that shows the features extraction, model fitting, models evaluation strategy and results.
● A short program (a python script) that uses your model to serve predictions for the ordering program. An OOP will be preferred.
● Try to think of this assignment as the first iteration of a long run project.
  Hence, try to come up with the most simple easy to implement solution. Think that in the future you might want to extend this project, for example, use other models or add another data source.

Thank you and good luck!

<u>Data Fields</u>

datetime - hourly date + timestamp

season - 1 = spring, 2 = summer, 3 = fall, 4 = winter

holiday - whether the day is considered a holiday

workingday - whether the day is neither a weekend nor holiday

weather - 1: Clear, Few clouds, Partly cloudy, Partly cloudy

2: Mist + Cloudy, Mist + Broken clouds, Mist + Few clouds, Mist

3: Light Snow, Light Rain + Thunderstorm + Scattered clouds, Light Rain + Scattered clouds

4: Heavy Rain + Ice Pallets + Thunderstorm + Mist, Snow + Fog
temp - temperature in Celsius
atemp - "feels like" temperature in Celsius
humidity - relative humidity
windspeed - wind speed
casual - number of non-registered user rentals initiated
registered - number of registered user rentals initiated
count - number of total rentals

(Based on kaggle's bike sharing demand competition)