_____ **(Project Title)**

Jason Andrews_(Name)

OBJECTIVES

My objective for this project is to identify and analyze trends in urban forestry in Worcester Massachusetts at the level of census tracts. Which census tracts are getting greener? Which have seen increases in LST? Can any such trends be correlated with specific actions, city planning, or other mechanisms of real world change?
I have data several tree planting programs from the last 15 years. It may be too early for those trees to have a significant and measurable impact on LST or greenness, but I can also analyze how proportional the plantings were in regards to existing needs for additional urban forestry in different census districts

_____
_____

ASSIGNMENTS
Complete the following assignments. Deliverables will include pushing to your public GitHub and updating the README at every step.

Project Proposal
1. **Fill in the highlighted portions of this prompt. Utilize the Group Prompts for inspiration.**
   ◦ Propose at least 5 vector datasets and 2 raster images that will address your topic.
   ◦ What relationships will you analyze? Propose at least 3 spatial queries.
2. **Create a new Final Project repository and invite Jon & Kunal to collaborate on GitHub.**

Due Friday, April 5 @ 5 pm (10 Points)

Assignment 1 – Data Acquisition, Processing, & Database Setup
2. **Find and Process Geospatial Data**
   ◦ Acquire data for at least 5 vector layers & 2 rasters:
     ▪ **Vector Data**
       1. 2010-2012 DCR planting data—lots of info about trees, with XY coords
       2. More recent planting information from DCR—fairly helter skelter, will be interesting to clean and consolidate
       3. 2010 census
       4. 2020 census
       5. 2010 ACS (American Community Survey)
       6. 2020 ACS
       7. LULC vector layers
     ▪ **Raster Data**
       1. Median composite images of NDVI, LST, UVI from 2007
       2. 2011
     ▪ 3. 2015
     ▪ 4. 2019
     ▪ 5. 2023
   ◦ Be sure to provide sources, descriptions, and visualizations in your README.

3. **Set Up Database Schema**
   - Create schema for your chosen topic.
   - What attributes should you be mindful of?

4. **Pre-process the Data**
   - Process the data to align different datasets temporally and spatially.
   - Be sure to capture the details in your README.

Due Friday, April 12 @ 5 pm (10 Points)

Assignment 2 – Import Spatial Data & Normalize Tables
1. **Import your data into PostgreSQL tables/schema created in Assignment 1.**
2. **Normalize your tables (1NF up to possibly 4NF, depending on your data) and explain the logic in your README.**
   - Even if normalization is not required, explain why in your README.

Due Friday, April 19 @ 5 pm (20 Points)

Assignment 3 - Spatial Queries & Presentation
Perform spatial analyses to determine:
- __Relationship between percent non-white and greenness in Worcester census tracts, and percent non-white and number of trees planted in that tract by DCR
- __Do trends in greenness by tract have any correlation to number of trees DCR has planted
- __Other correlations with greenness by census tract--- income, property size, pop density, proportion of public land, etc.

Spatial Analysis & Presentation are Due Thursday, April 25 @ 10:15 am (40 Points)

Final GitHub Repo & README are Due Friday, May 3 @ 5 pm (30 Points)

Total: 110 Points

NO LATE SUBMISSIONS ACCEPTED AFTER MAY 3 -- Plan accordingly.