Here's your fully updated **Medical Test Analyzer Project Plan** tailored for your `heart.csv` dataset.

Beginner's Guide – Before You Start

What you need installed:

- Python (download from python.org)
- Code editor (VS Code recommended)
- Python packages:

```
pip install pandas matplotlib seaborn scipy
```

Where to write your code:

- Inside `main.py` in your project folder

Where to get data:

- Use your `heart.csv` file (it already contains useful columns)
- Columns in your file:
- `age`: Age of the person
- `sex`: 1 = male, 0 = female
- `cp`: Chest pain type
- `trestbps`: Resting blood pressure
- `chol`: Serum cholesterol (mg/dl)
- `fbs`: Fasting blood sugar > 120 mg/dl (1 = true, 0 = false)
- `restecg`: Resting electrocardiographic results
- `thalach`: Maximum heart rate achieved
- `exang`: Exercise-induced angina
- `oldpeak`: ST depression induced by exercise
- `slope`, `ca`, `thal`: Additional heart disease indicators
- `target`: 1 = disease present, 0 = not present

Where to save files:

- In your `medical_test_analyzer` folder:
- `main.py` → Python code
- `data.csv` → Dataset (can be your `heart.csv` renamed)
- `README.md` → Project explanation
- `plots/` → Graphs you generate

How to run your code:

- Open terminal in project folder and run:

```
python main.py
```

Project: Medical Test Analyzer (Using Python and Statistics)

Goal: Use statistics to analyze health-related metrics in your dataset.

Example questions you can explore:

- Is the average cholesterol (`chol`) different between males and females?
- Do people with higher `trestbps` also have higher chances of heart disease (`target`)?
- Are `thalach` (max heart rate) values normally distributed?
- Do certain chest pain types (`cp`) correlate strongly with heart disease?

Total Time Needed: 9–10 hours\ **Time Available:** Friday, Saturday, Sunday, Monday (4 PM – 12 AM)

📅 Friday – Quick Start (0.5 hour)

1. Make folder `medical_test_analyzer`
2. Create:
3. `main.py`
4. `data.csv` (copy/rename your `heart.csv`)
5. `README.md`
6. Install packages
7. Add project header in `main.py`

📅 Saturday – Data Setup & Checking (3.5 hours)

1. Load dataset in pandas
2. Explore basic stats (`mean` , `max` , `min` , `describe()`)
3. Draw:
4. Histogram for `chol` , `trestbps` , and `thalach`
5. Boxplot for `chol` and `trestbps`

📅 Sunday – Hypothesis & Statistics (3.5 hours)

1. Form hypothesis (e.g., "Males have higher average cholesterol than females")
2. Check normality (histogram, optional Shapiro test)
3. Run statistical tests (T-test for two groups, ANOVA for more)
4. Calculate confidence intervals for means
5. Bonus: Compare `thalach` values for people with and without heart disease (`target`)

📅 Monday – Final Touches & Extra Feature (2.5–3 hours)

1. Refactor code into functions (`load_data()`, `analyze_data()`, etc.)
2. Write README with analysis results and explanations
3. Save all graphs into `plots/`
4. Optional: Ask user for cholesterol or blood pressure value and output whether it's high based on dataset stats

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🔗 Final Deliverables:

- `main.py` – Python code
- `data.csv` – Dataset (your `heart.csv`)
- `README.md` – Project explanation
- `plots/` – Graphs