

GOOD MORNING!

早上好!

안녕하세요!

PROJECT INTRODUCTION

DAY I (DONE)

- Welcome
- Project Introduction
- Introduction to Project Development Process
- Business Requirement Development
- System Requirement Development
- System(High Level) Design
- Time Management

DAY 2 (DONE)

- YOLOv8 기반 데이터 수집/학습/deploy (Security Alert)
 - 감시용 데이터 수집(bus, truck, tank 등)
 - 감시용 데이터 라벨링
 - YOLOv8 기반 학습
 - YOLOv8 Object Detection
- Porting to ROS
 - Create Security Alert Node
 - Generate Topics to send image and Obj. Det. results
 - Create Subscriber node and display image and print data from the Topic

DAY 3

- Flask 를 이용한 웹 서버 구축 (System Monitor)
 - Flask/HTML Intro
 - Deploy YOLOv8 Obj. Det results to web
 - Log in 기능 구현
 - Sysmon 웹기능 구현
 - 알람 기능 구현
- Porting to ROS
 - Create Sysmon Node
 - Receive Image/Data Topic from Security Alert Node and display on the SysMon webpage

DAY 3

- SQLite3를 이용한 데이터베이스 구축 및 연동 (System Monitor)
 - SQLite3 기본 기능 구현
 - DB 기능 구축
 - 알람이 울리는 경우 DB에 저장하는 기능 구현
 - 저장된 내용 검색하는 기능 구현
- Porting to ROS
 - Update Sysmon Node code
 - Update the database with received Obj. Det. Data from Security Alert Node
 - Display the content of DB on Security Monitor web page

DAY 4

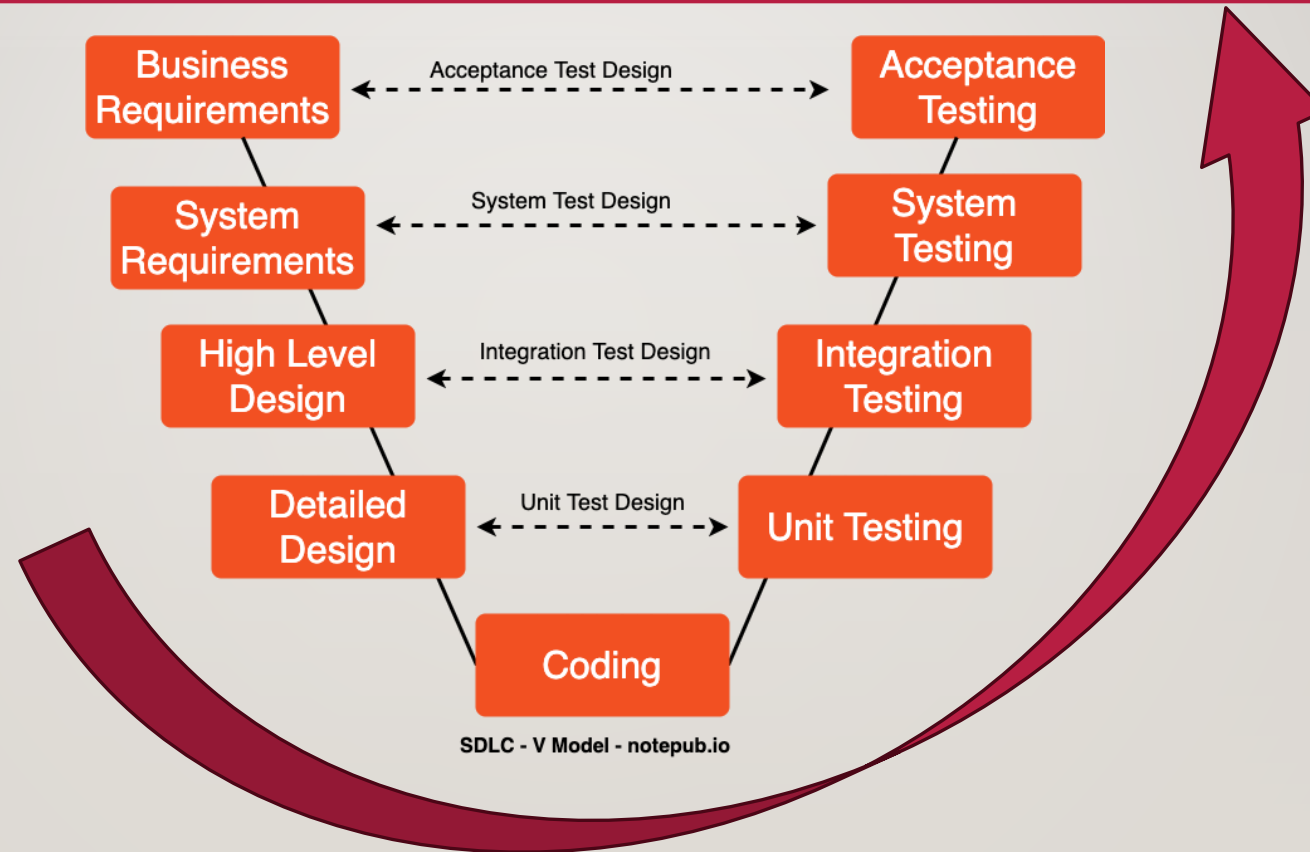
- AMR (Autonomous Mobile Robot)기반 카메라 인식 autonomous driving 시스템 with obstacle avoidance 구축 (AMR Controller)
 - Digital Mapping of environment
 - Goal Setting and Obstacle Avoidance using Navigation
 - Object Tracking w/ AMR camera
 - Control logic between navigation/obj.Tracking/telops
- Porting to ROS
 - Create AMR Controller Node
 - Create and send Obj.Tracking Image and data to Sysmon

프로젝트 RULE NUMBER ONE!!!

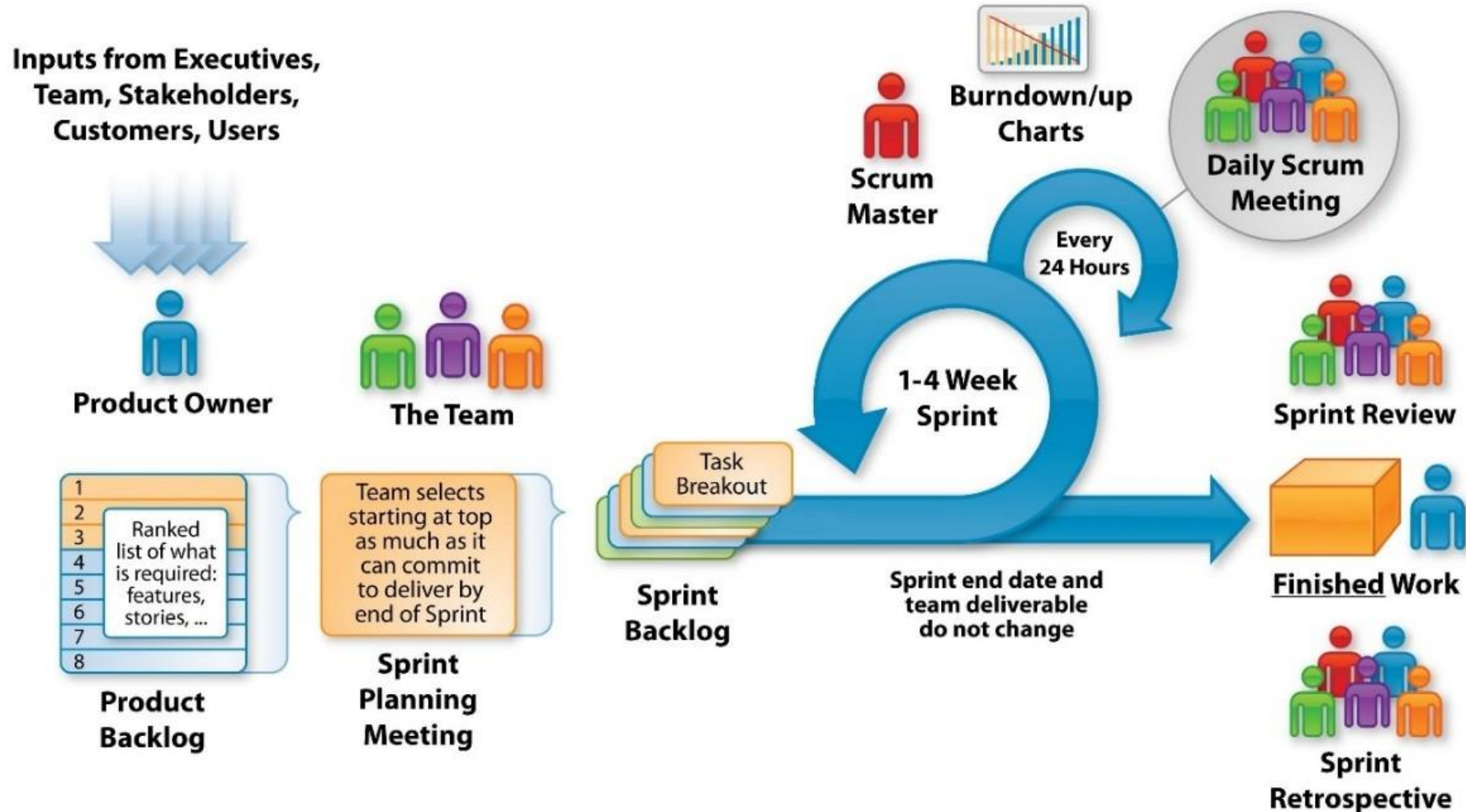
Have Fun Fun Fun!



SW DEVELOPMENT PROCESS



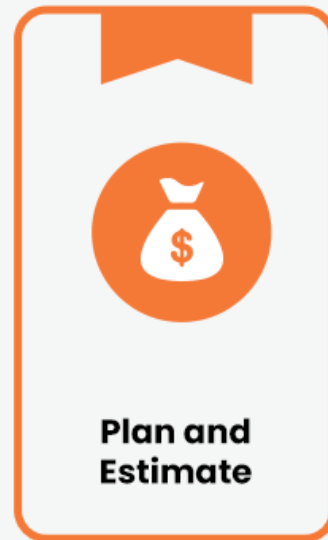
The Agile - Scrum Framework



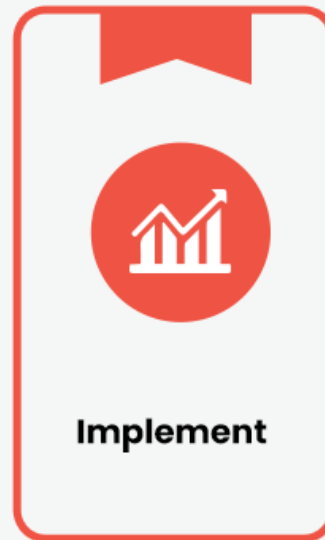
5 Stages of Scrum Sprint



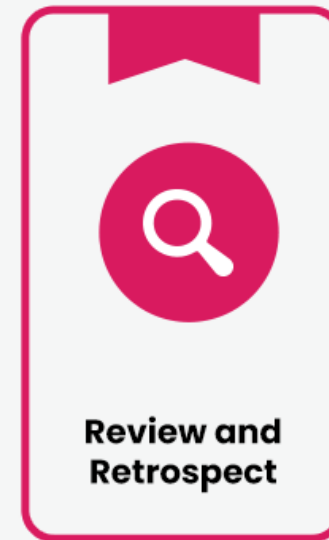
This phase includes the processes related to the commencement of a project, such as a scope and objectives, creating and distributing its charter, and taking other steps to guarantee success.



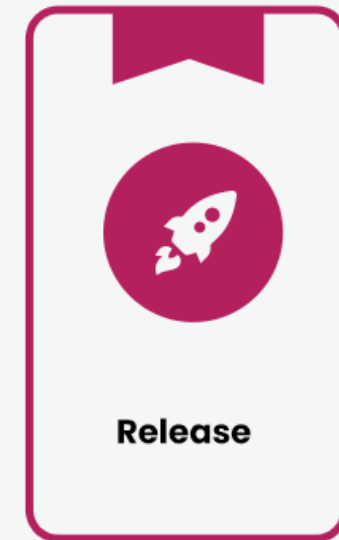
This phase involves planning and estimating processes, including creating user stories, approving, assessing, committing user stories, creating tasks, evaluating tasks, and creating a Sprint backlog.



This phase is about executing the tasks and activities to create a product. These activities include building the various outputs, conducting daily standup meetings, and grooming the product backlog.

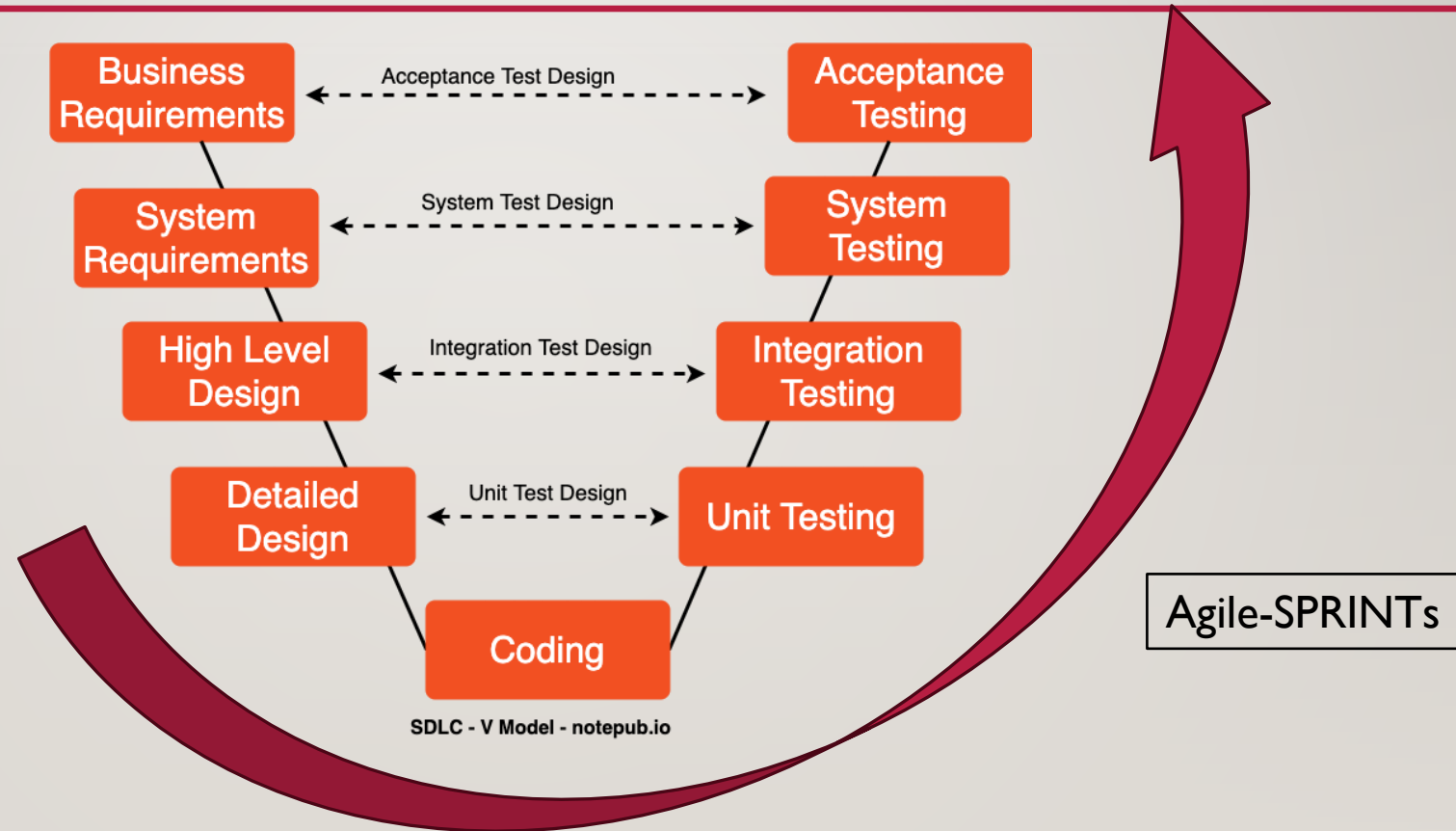


This stage of the project lifecycle is concerned with evaluating what has been accomplished so far, whether the team has worked to plan, and how it can do things better in the future.



This stage highlights delivering the accepted deliverables to the customer and determining, documenting, and absorbing the lessons learned during the project.

SW DEVELOPMENT PROCESS



PROJECT SPRINTS

- Security Alert
 - Object Detection

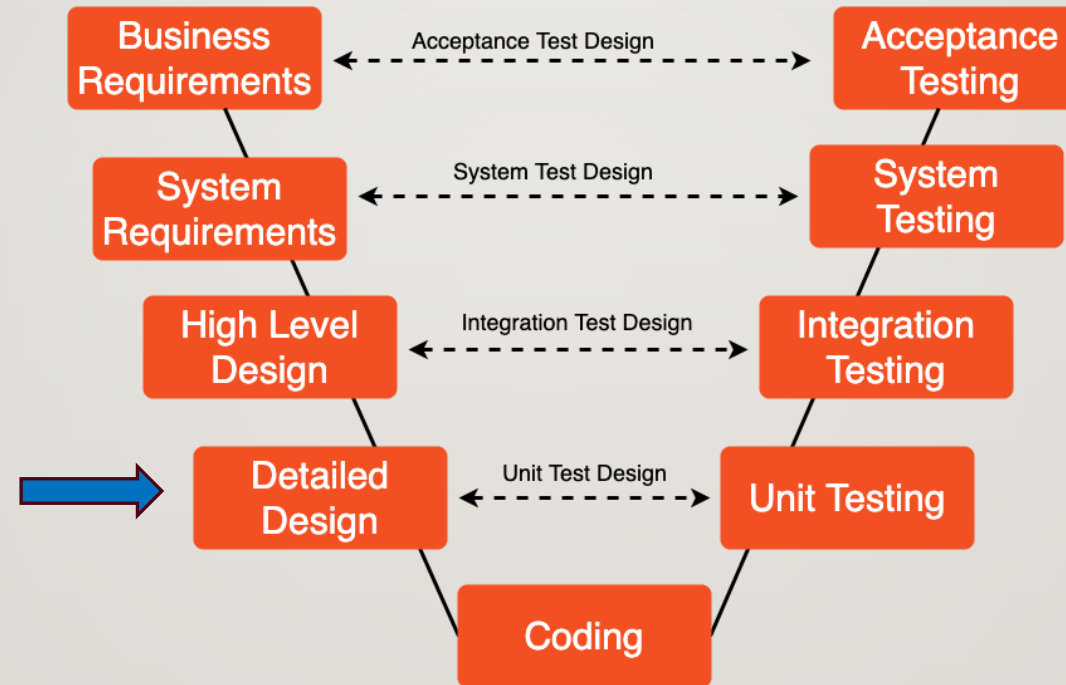
- System Monitor
 - Display Security Camera and info
 - Display AMR Camera and info
 - Store, display, and report Alerts

- AMR Controller
 - Movement (SLAM)
 - Target Acquisition (Obj. Det.) and Tracking

SYSTEM MONITOR SPRINT



SPRINT 2 – SYSTEM MONITOR



SDLC - V Model - notepub.io

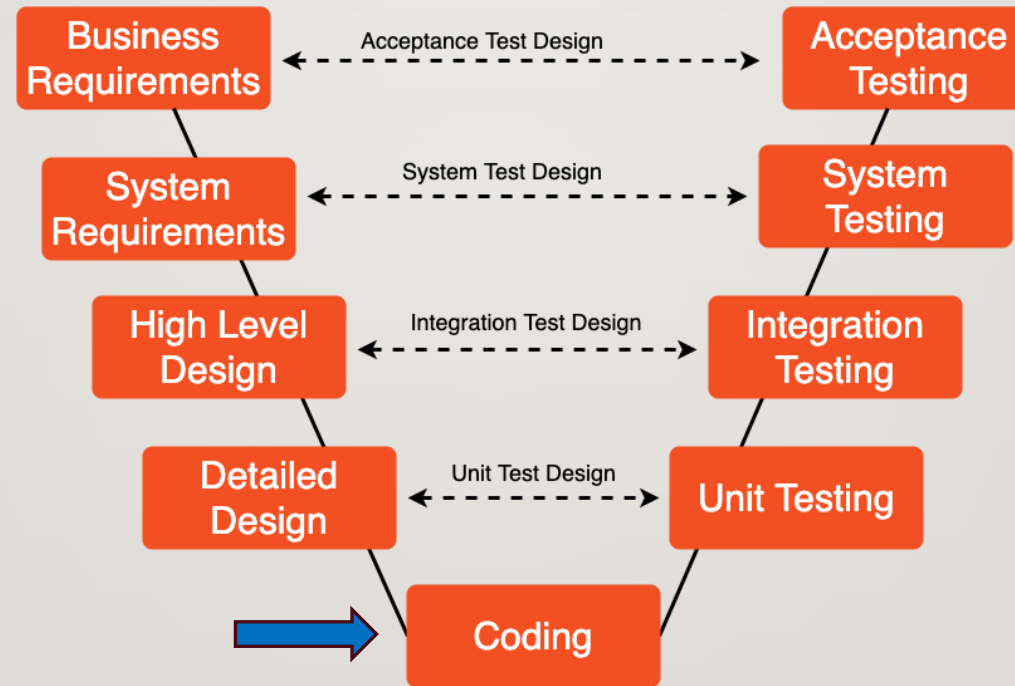
TEAM EXERCISE 7

Perform Detail Design of System Monitor Module using Process Flow Diagram

DETAIL DESIGN REVIEW BY EACH TEAM

Using the process flow diagram present team's design

SPRINT 2 – SYSTEM MONITOR



SDLC - V Model - notepub.io

CODING HINTS

- Flask Basic Review
- SQLite Basic Review
- Webpage
 - Login page
 - Two video window
 - Alert Report
 - Status Captured and Following
- Database – SQLite
 - Login Data
 - Status Data

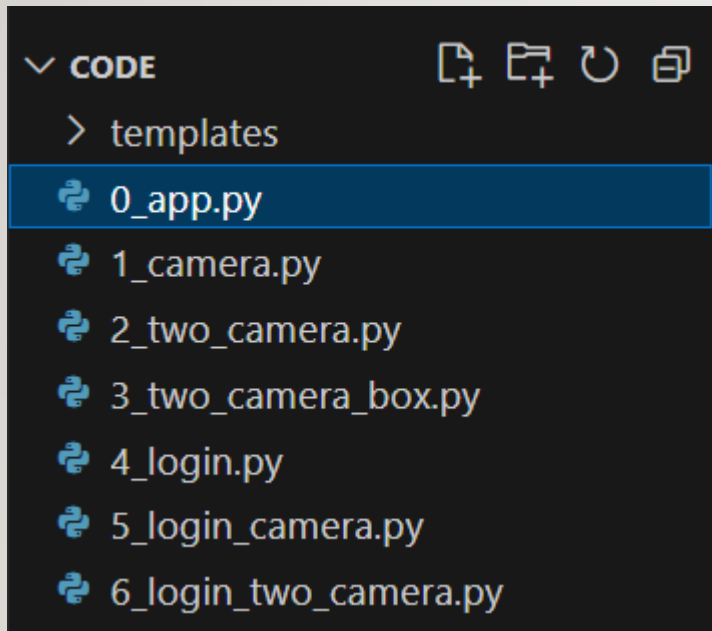
INTRODUCTION TO FLASK

- What is Flask?
A lightweight web framework for Python.
- Why Flask? Simple, flexible, good for beginners and small projects.
- `pip install Flask`

BASIC FLASK APPLICATION STRUCTURE

- project/
 - |—— app.py # Main Flask application file
 - |—— templates/ # Folder for HTML templates
 - |—— index.html

FLASK HINTS



- HTML Reference:

[HTML elements reference - HTML: HyperText Markup Language | MDN](https://developer.mozilla.org/en-US/docs/Web/HTML/Element)

<https://developer.mozilla.org/en-US/docs/Web/HTML/Element>

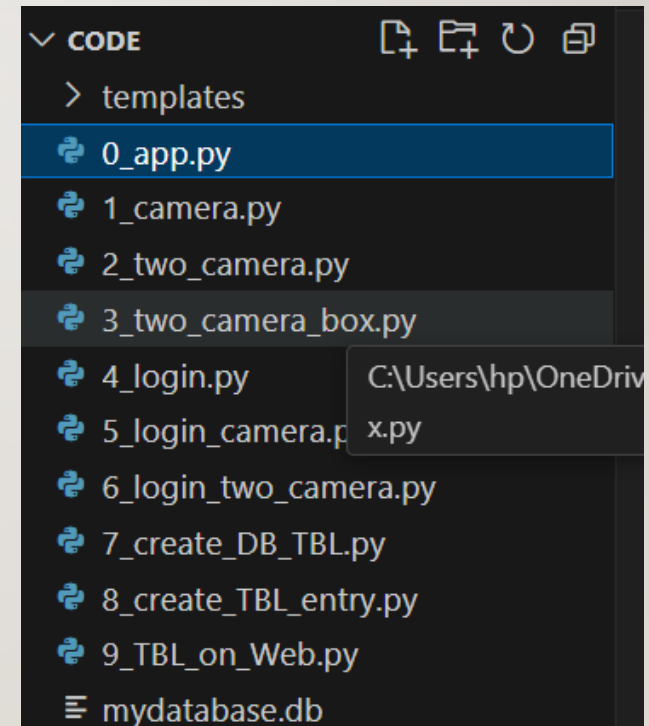
- CSS

[CSS: Cascading Style Sheets | MDN](https://developer.mozilla.org/en-US/docs/Web/CSS)

<https://developer.mozilla.org/en-US/docs/Web/CSS>

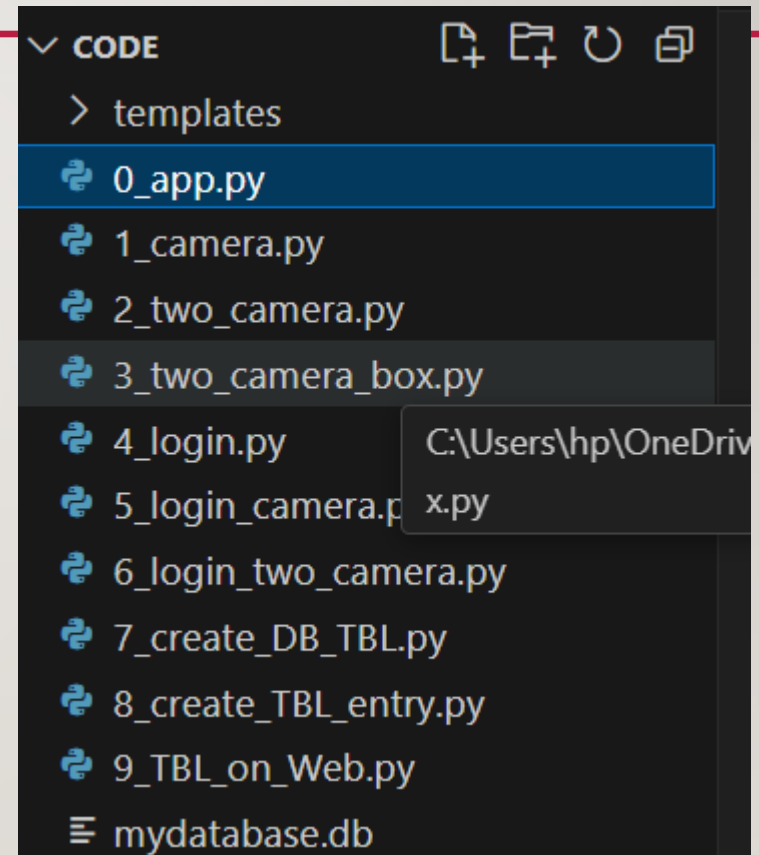
CODING HINTS

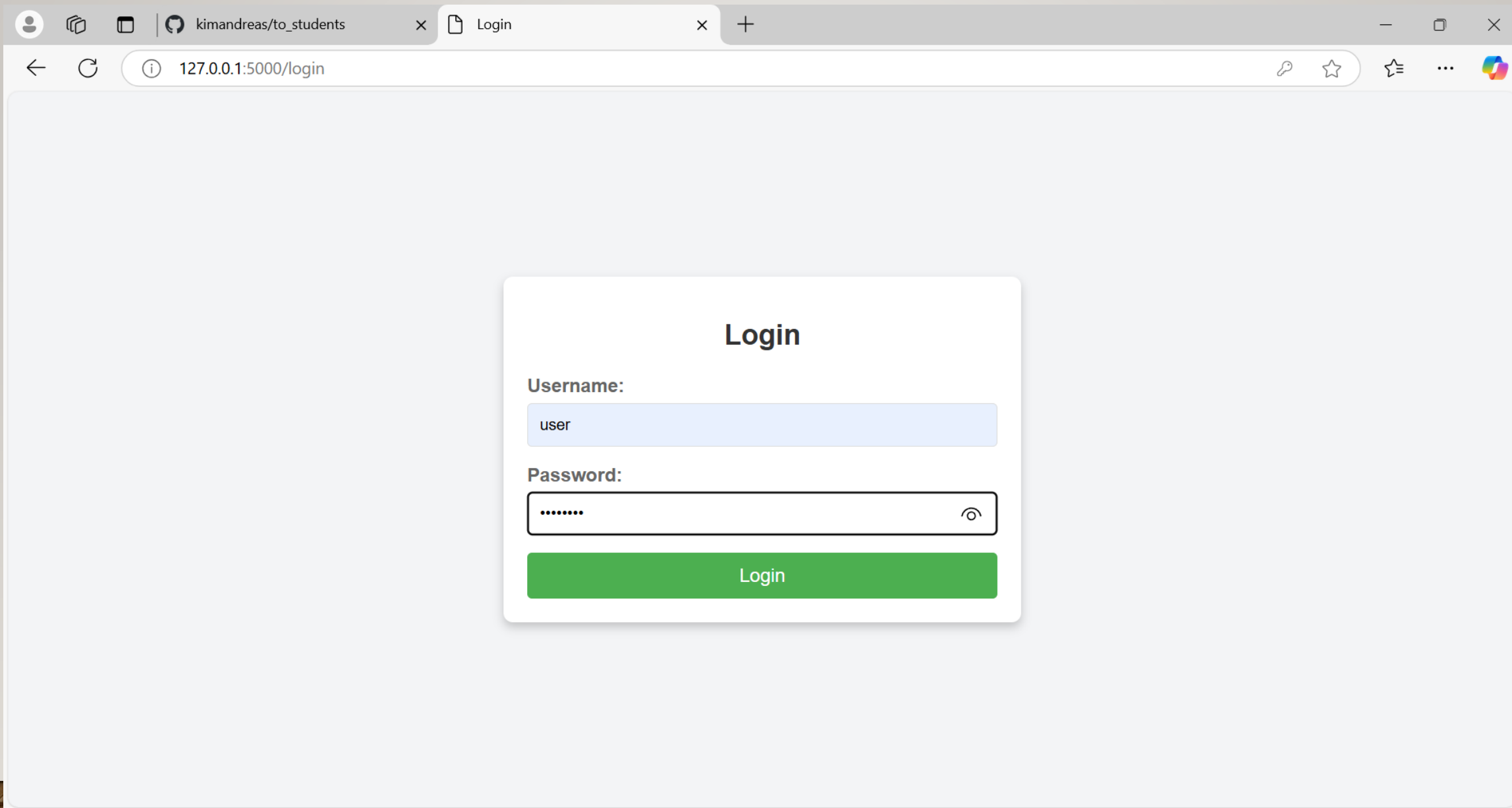
- Flask Basic Review
- SQLite Basic Review
 - SQLite is a lightweight, self-contained, serverless SQL database engine.



CODING HINTS

- Flask Basic Review
- SQLite Basic Review
- Webpage
 - Login page
 - Two video window
 - Alert Report
 - Status Captured and Following
- Database – SQLite
 - Security Alert Data





kimandreas/to_students

Welcome

127.0.0.1:5000/welcome

🔑

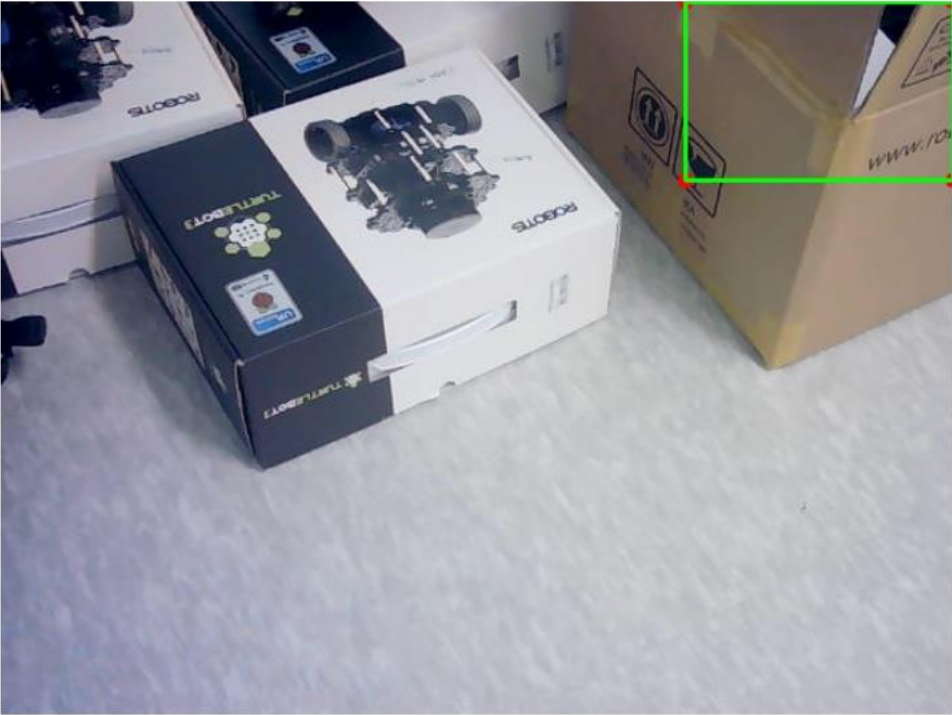
☆

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🌈


welcome, user!

You are now logged in.



Violations Detected

ID	Name	Date & Time
0	Truck	2024-11-06 10:30:22



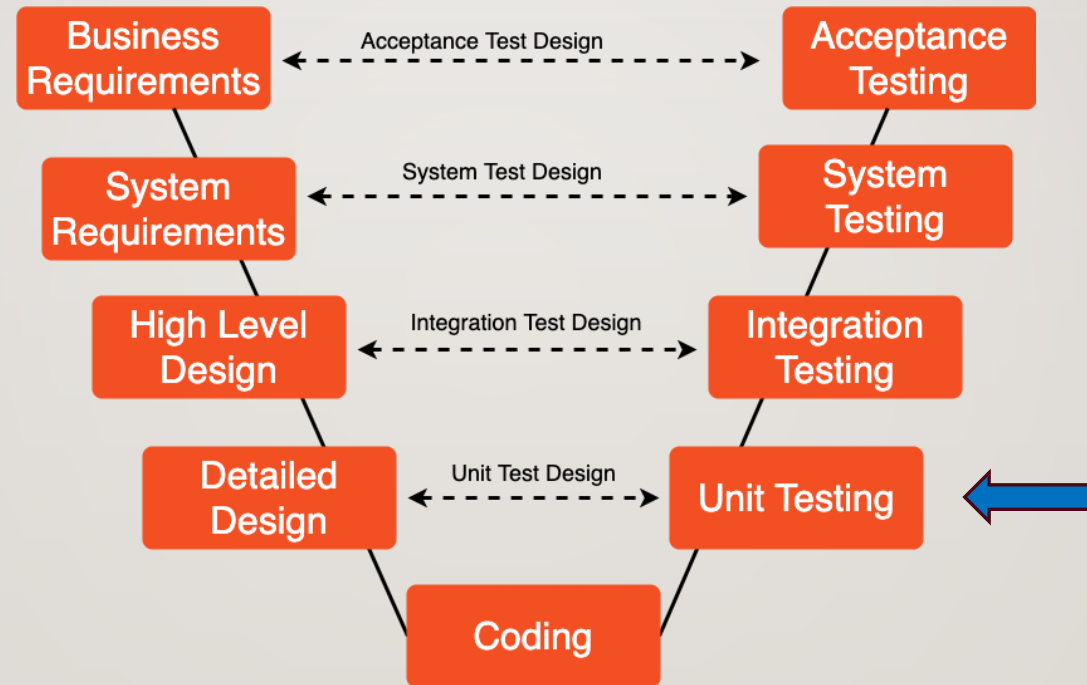
Track and Following

ID	Name	Date & Time
1	Dummy	2024-11-06 10:30:22

EXPECTED OUTCOME

- Sysmon with two windows and related detection and tracking info
- ROS Nodes, Services, Topics

SPRINT 2 – SYSTEM MONITOR



SDLC - V Model - notepub.io

TEAM EXERCISE 8

Perform coding and testing of System Monitor Module

RESULTS & CODE REVIEW BY EACH TEAM

Show actual results against the expected results and explain the code written

EXPECTED OUTCOME

- Security Alert and SysMon able to pass topics to update video and data

TEAM EXERCISE 9

Perform integrate and test of System Monitor and Security Alert Modules

RESULTS & CODE REVIEW BY EACH TEAM

Show actual results against the expected results and explain the code written