Sessional Assignment

Course Name: OOSAD

Submitted By:

Yahya Riaz (12280)

BS (SE) Section: A

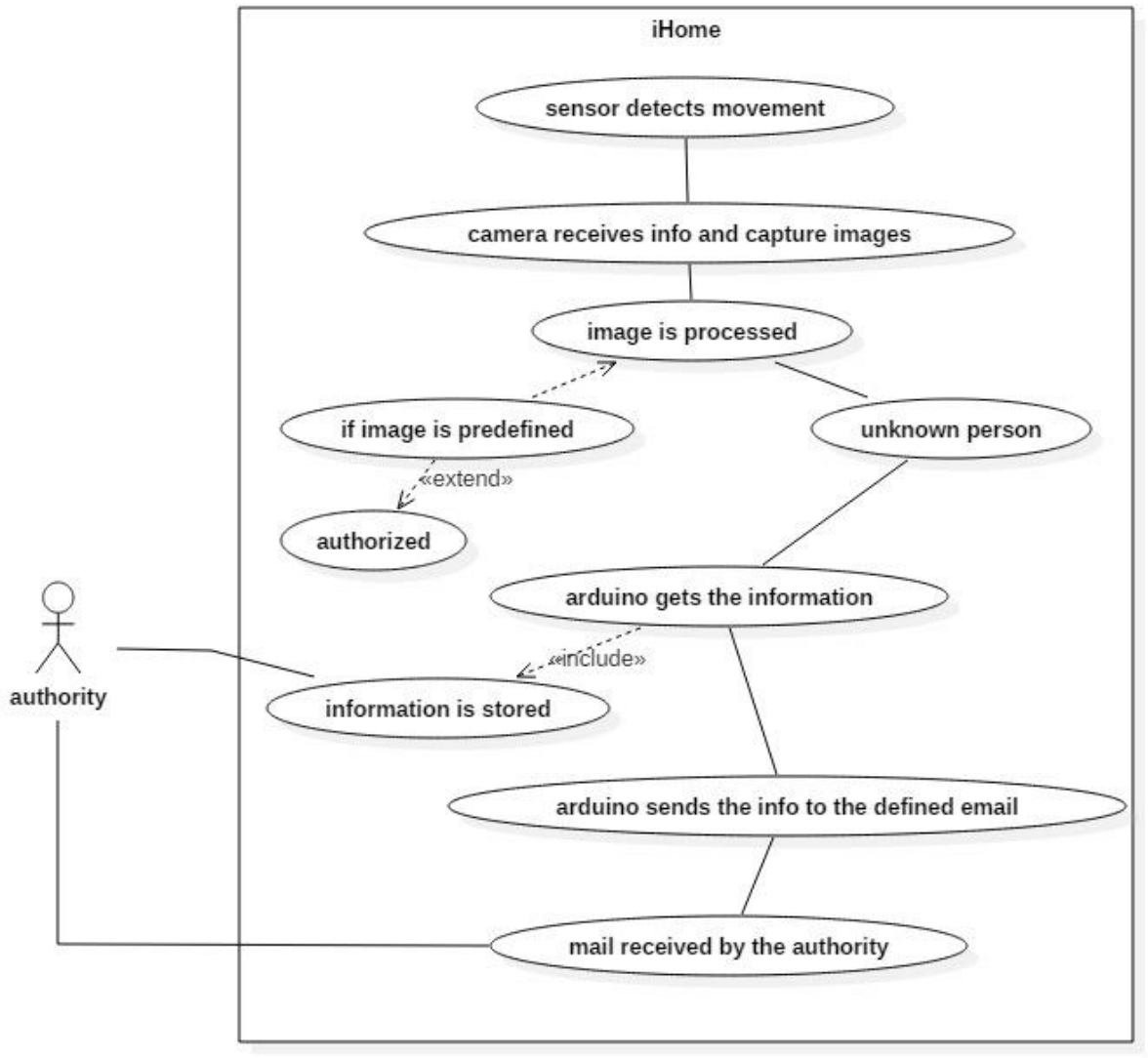
Submitted To:

Sir Fahim Ullah

Dated: 8th June 2020

Department of Computer Science,
IQRA National University, Peshawar Pakistan

Question #1: **USE CASE DIAGRAM**



TEXTUAL USE CASE

Name

- iHome.

Participating actors

- Authority.

Entry condition

- PIR Sensor detects motion.

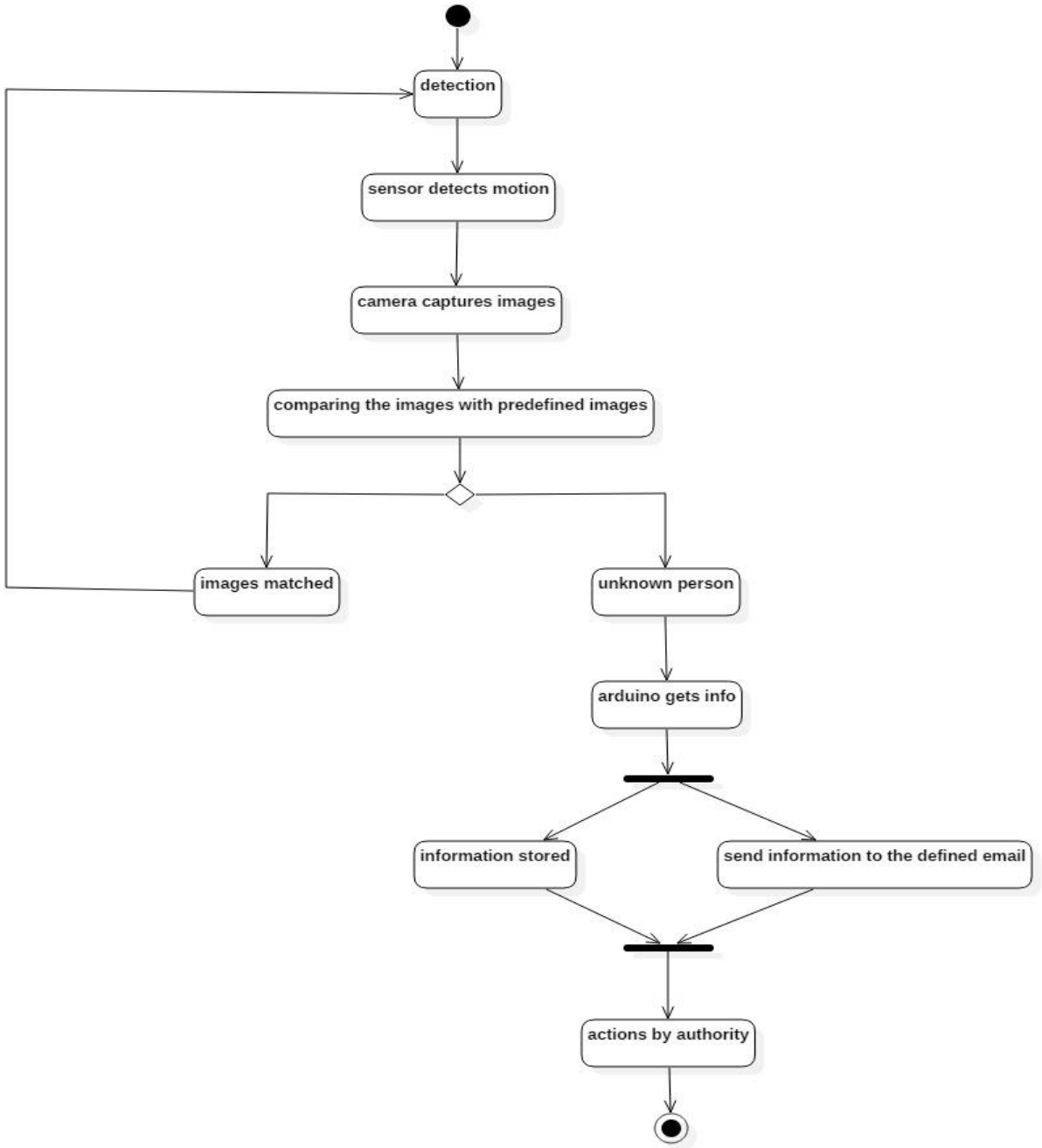
Exit condition

- Email is sent to authority.

Flow of events

- Sensor detects unnecessary movement.
- Signal is sent to the camera and camera capture images.
- Arduino collects the images.
- The information is stored.
- Image processing is started on the images that taken.
- If images that are captured matches with the predefined images.
- The system will detect it and will display authorized.
- If the images do not match the predefined images, the system will respond to it as an intruder.
- And the information regarding to the intruder is sent to the authorities via Email.
- On the other hand, authority receives the mail and will take action accordingly.

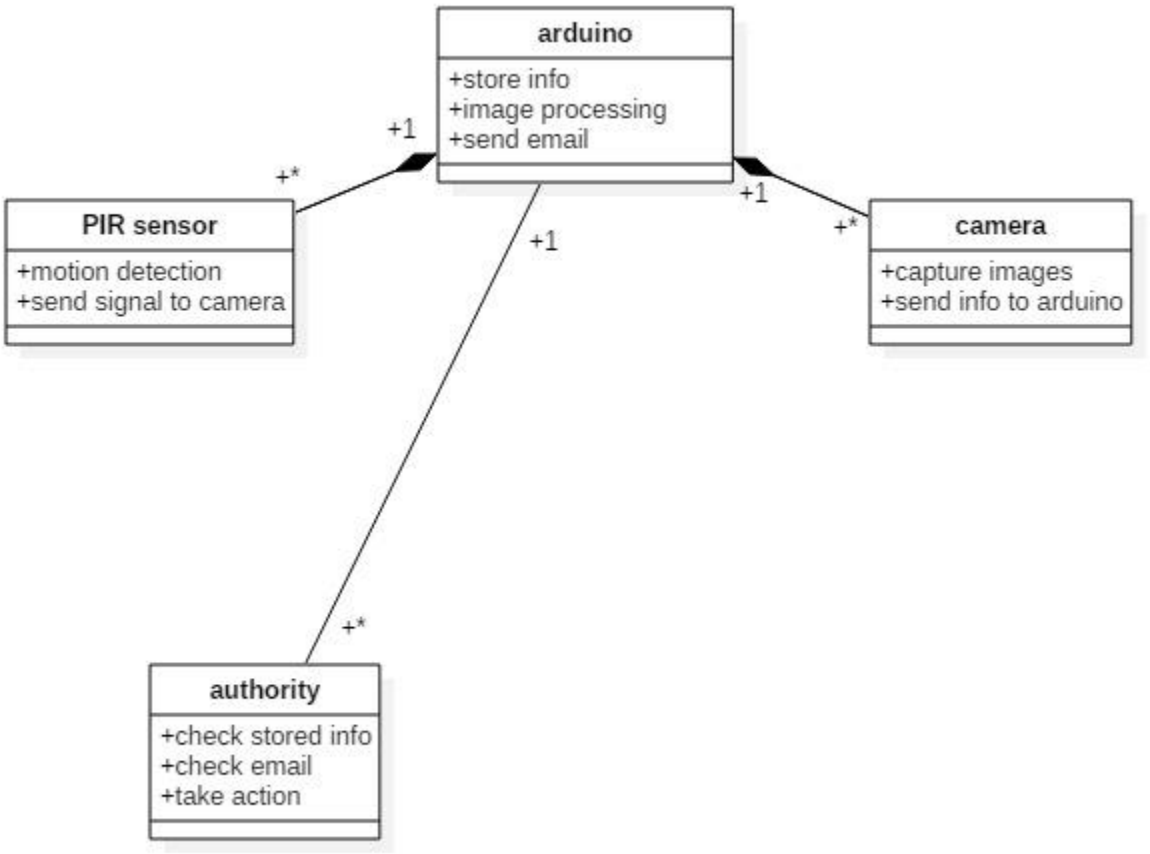
Question # 2: **ACTIVITY Diagram**



Flow of Activities

- Initially the PIR sensor is active to sense any type of motion.
- When PIR sensor detects motion, the signal is sent to camera.
- When camera has the control, it captures images of the moving body.
- The images are then compared with the predefined images.
- If the images matches, the control if given to the sensor for detection.
- If the images do not match the predefined images, unknown person occurs as a result.
- Arduino compiles the data and stores it in the data base.
- And the information is sent to the authority via Email.

Question #3: **CLASS Diagram**



Explanation of Class Diagram

Arduino:

- Arduino has the attributes of to store the information in the data base.
- Image processing in which it will compare the taken images with the images which that are predefined in the system.
- And it will send the details to the Email which belongs to the authorities.

PIR sensor:

- PIR sensor detects the movement.
- It will transmit the signal to the camera module for taking further actions.

Camera Module:

- When camera has the control, it will capture images of the moving body.
- And the further information is proceeded to the Arduino.

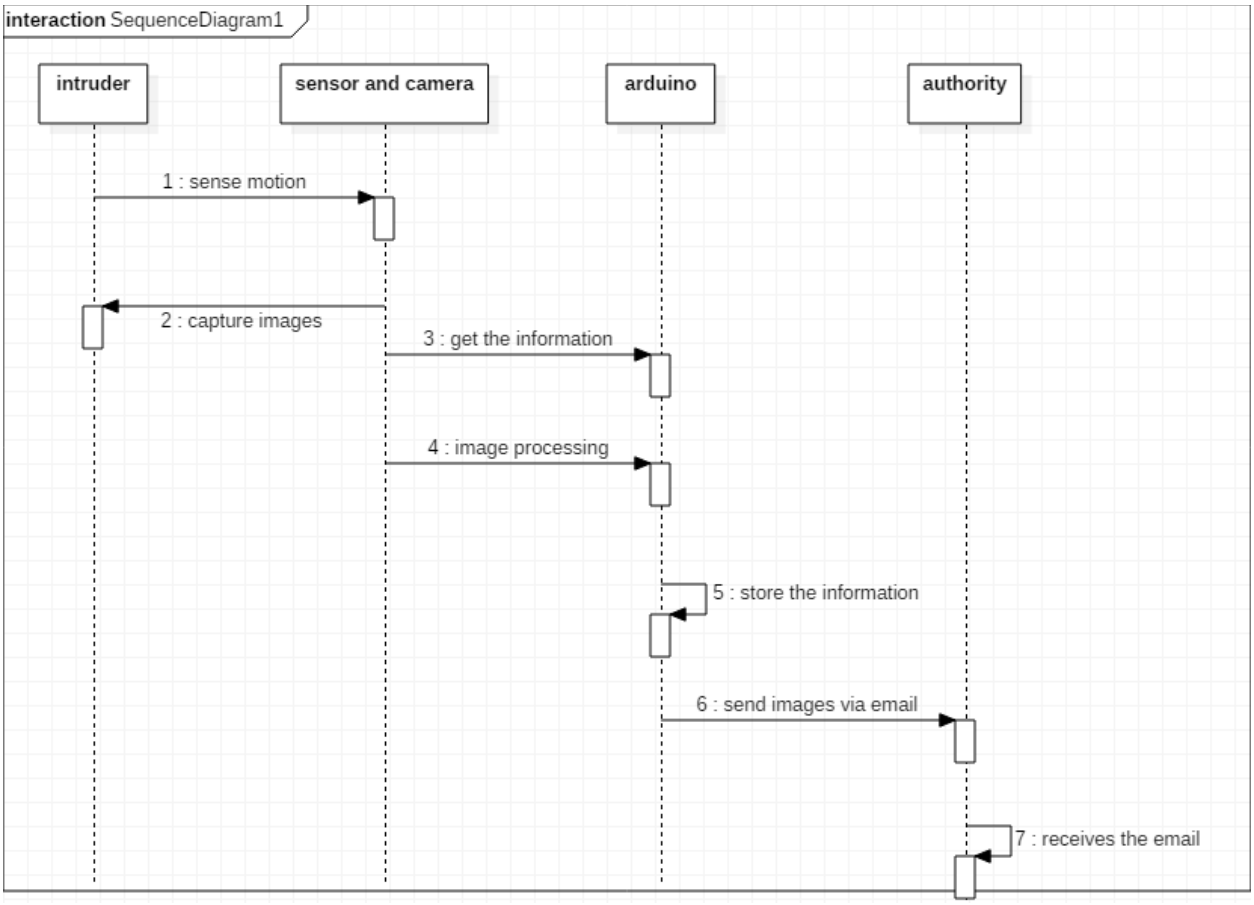
Authority:

- Authority can access the stored information from the system.
- Can check the emails regarding the security.
- And can take further actions.

Relation between the classes:

- Relation between Arduino and PIR sensor is 1 to many, which means an Arduino can be connected with many sensors. And the relation is composite
- Relation between Arduino and camera is also 1 to many, in which an Arduino can be connected with many cameras. And it is the composite relation.
- Relation between Arduino and authority can be 1 to many, in order to give authority to a single person, it can be 1 to 1 relation.

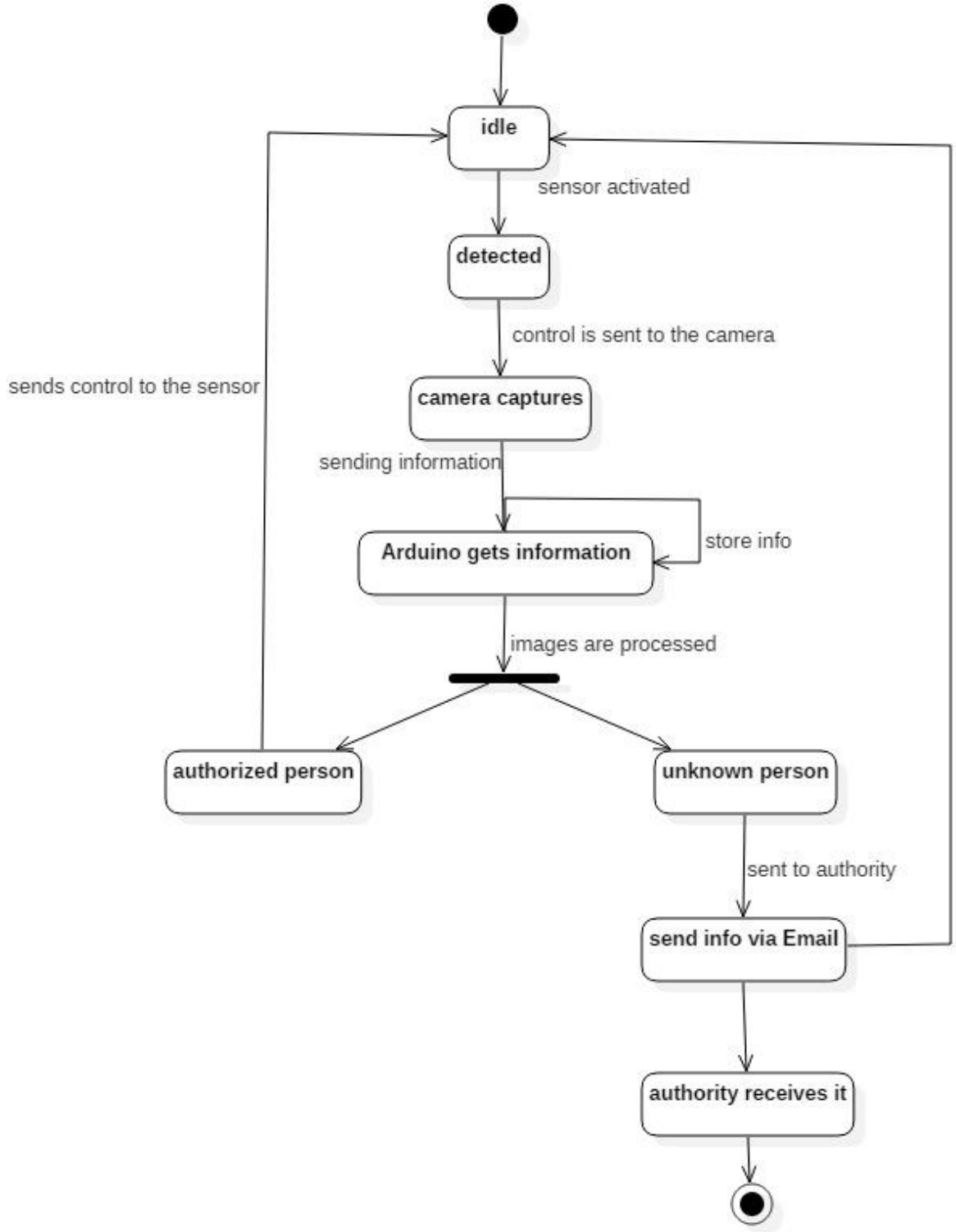
Question #4: **Sequence Diagram**



Explanation:

- Intruder comes in the range of PIR sensor.
- Sensor detects it and sends the control to camera.
- Camera capture images of the person.
- Then information is proceeded to Arduino.
- Arduino checks whether the person is authorized or not (image processing).
- Further more the information is stored with in.
- After detecting the person as an intruder, the information is sent to the authorities.
- On the other hand, authorities receive the information and can be able to take action on it.

Question #5: **State Chart Diagram**



State chart diagram shows how the control is transferred from one stage to another.

- Initially the sensor is in the control, which is already in idle stage.
- When a person comes in the range of sensor, sensor will detect it and will send signal to the camera.
- When camera has the control, it will take images.
- After taking the images, control is then put forward to Arduino. And the information is stored with in.
- When Arduino has the information, it will start processing the images.
- After the images are processed, it will match the images with archives.
- If images matched the archives, the result will be authorized person. And the control is given to the sensor.
- If the images do not match with archives, the information is sent to the defined Email.
- And on the other hand, the information in being received by the authorities.