LED Farming

Technical part

<u>What we did so far:</u>

1. Translation part: Slider mechanism tolerance test

Figure 1:

2. Light assembly: Slider mechanism tolerance test and LED light fit test

Figure 2: A part that holds the LED lighting

3. Body assembly: Worm gear and Arch arm spur gear mesh test

Figure 3: Worm gear (left) and Arch arm (right) for the body of the pot

4. Sensor assembly: Light intensity and humidity senor test
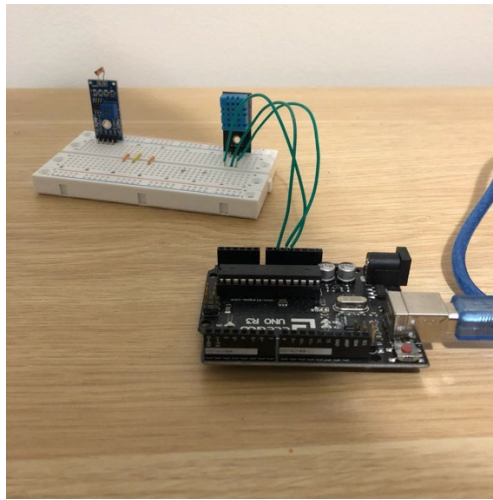

Figure 4: Assemble of Humidity sensor and light intensity sensor using Arduino UNO

5. Designing: Designing the structure of the pot
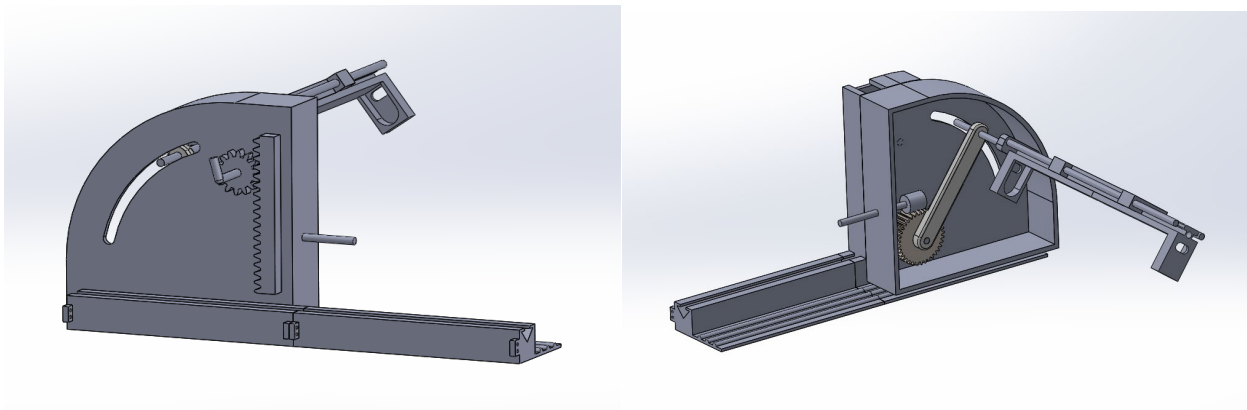

Figure 5: CAD model for assembly of the products

<u>Ongoing Ideas:</u>

1. Circular movement mechanism

      - 4 gear train with supporting structure

          Problem: Lighting is heavy so it is hard to fixate

      - Worm gear application

          Problem: The gear is malfunctioning

2. Translation movement mechanism

      - Piston slider mechanism

          Problem: The movement is too limited

      - Rack gear mechanism

          Problem: Certain movement is limited

Agricultural part

<u>What we did so far:</u>

1. Research Pansy flower:

      -Optimal temperature for growth: 18˚C but can be grown as low as -5˚C

      -Optimal humidity: Not too humid (*need further research)

      -Optimal soil ratio: Soil and compost (50:50)

      -Optimal light intensity: 3000~5000 candela

<u>Ongoing Ideas:</u>

1. Finding out the amount of water and nutrients to put for the project and time it takes to germinate

Figure 6: Germination process optimizing the amount of water and nutrients

      (Source: Frau Zinnie)   (Source: Better Homes and Gardens)

Figure 7: Images of Pansy flower