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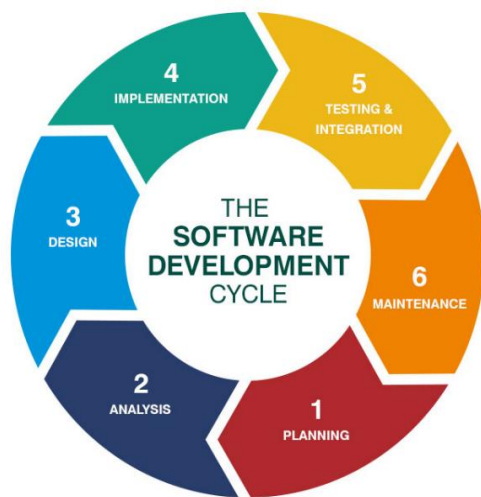
MATRIC NO: 18/ENG05/036

DEPARTMENT: MECHATRONICS

COURSE CODE: ENG224

## SOFTWARE DEVELOPMENT CYCLE

### TOPIC: SOFTWARE DEVELOPMENT FOR IRRIGATION CONTROL



**PLANNING:** The watering of a plant is needed for sufficient growth and stability of the plant, it's not only watering alone there has to be a time interval when this water is being poured on the plant .This is when irrigation comes in, irrigation is the application of controlled amount of water in a plant, In a situation where there is irrigation problem which can be caused by human behavior i.e.

laziness, fatigue etc.

A secure software program comes along to help with the irrigation of the crops properly and efficiently without stress, this software will also help with the water level in the tank, application of water to al crops, soil temperature and moisture

## ANALYSIS:

- A secure password should be made so no one interferes with the software
- The application of water will work with a timer
- The need to know the type of soil used to plant the crop
- A sensor will be used in the tank to know when the minimum water level is passed
- The sprinklers will go off after a time interval to apply water to the plants
- A sensor should be put on the soil to know the temperature be it dry or wet

## DESIGN:

The software will have a very simple procedure to reduce stress of the user. Making it basic allows anyone to be able to use the software.

## IMPLEMENTATION:

This software will be securely encrypted in case of unauthorized personnel, then the timer will be set to depending on the type of soil to send a signal to the sprinklers to apply water to the crops, sensors will be present to determine the temperature and moisture content of the soil which will send signals to the timer to know when water should be applied. There will be a sensor in the tank whereby if the minimum amount of water is passed the sensor sends a signal to the timer which raises an alarm for some minutes for the water to be pumped in the tank, the water from the tank is what the sprinklers will use to wet the plants

## TESTING:

The software will be run and if there are any problems/errors that occur then debugging will take place in order to correct the error or problem in the software

**DEPLOYMENT & MAINTENANCE:** After testing is done the software will be released to the farm for use and from time to time servicing will be done to the software and materials

## SOFTWARE & HARDWARE FEATURES:

- The capacitive type level sensor
- Soil water potential sensor
- Timer
- Stpo1 (soil temperature sensor)
- Sprinklers
- The transmission of signals from the timer to the sprinklers
- The transmission of signals from the sensors used to determine the temperature and moisture content of the soil to the sprinklers
- Transmission of signals from the sensor in the tank to the alarm
- The use of visual studio code to write the programs

## ALGORITHM:

1. Start
2. Password
3. When time interval is reached with the clock
4. The temperature reading & moist content of the soil reading
5. If temperature is  $>$  required value or moist content is  $<$  required value  
return to line 3 else move to 7
6. If water level is  $<$  minimum value, alarm goes off in line 3 else water is sufficient
7. Application of water on the plants

## FLOWCHART:

