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Department: elect/elect

Matric no: 18/ENG04/060

A. Discuss the application development following the software development cycle

Software Development Cycle (SDC) is a process used by the software industry to design, develop and test high quality software. It is also called as Software Development Process. SDC is a framework defining tasks performed at each step in the software development process.

Conceptualization

Software Development Cycle (SDC) is a process used by the software industry to design, develop and test high quality software. It is also called as Software Development Process. SDC is a framework defining tasks performed at each step in the software development process.

The application to be created is an irrigation system software that can:

1. Read the temperature of the soil and determine its moisture content
2. Configure a time interval for the water system (based on 1 and 2)
3. Lastly trigger an alarm indicating no sufficient water in the tank for the irrigation
4. The system will also require security, hence a password is enabled

B. Critically discuss the hardware and software features

Specification

Hardware

- Soil temperature measuring instrument
  In soil temperature measurement, the system, PT100 platinum resistance thermometers (PRT) are used to measure the temperature of the soil. PRT's are widely used in automated systems to measure temperature in place of traditional mercury in glass or spirit type thermometers
- Soil moisture measuring instrument
  Portable and stationary tensiometers measure the soil moisture content as a tension or pressure range Tensiometers fundamentally act in a similar fashion to a plant root measuring the force that plants have to exert to obtain moisture from the soil. To measure the temperature of the soil, an instant-read thermometer probe is pushed as deep into the soil as possible to get an accurate reading of the soil temperature and the moisture is measured from the plant roots these are sent to the irrigation system to determine if water is needed in the system.
- Alarm system
- Security system

C. Support your answer with a flowchart and algorithm

STEPS

1. Start
2. Print "Input password"
3. If password is correct

   Print "Welcome user"

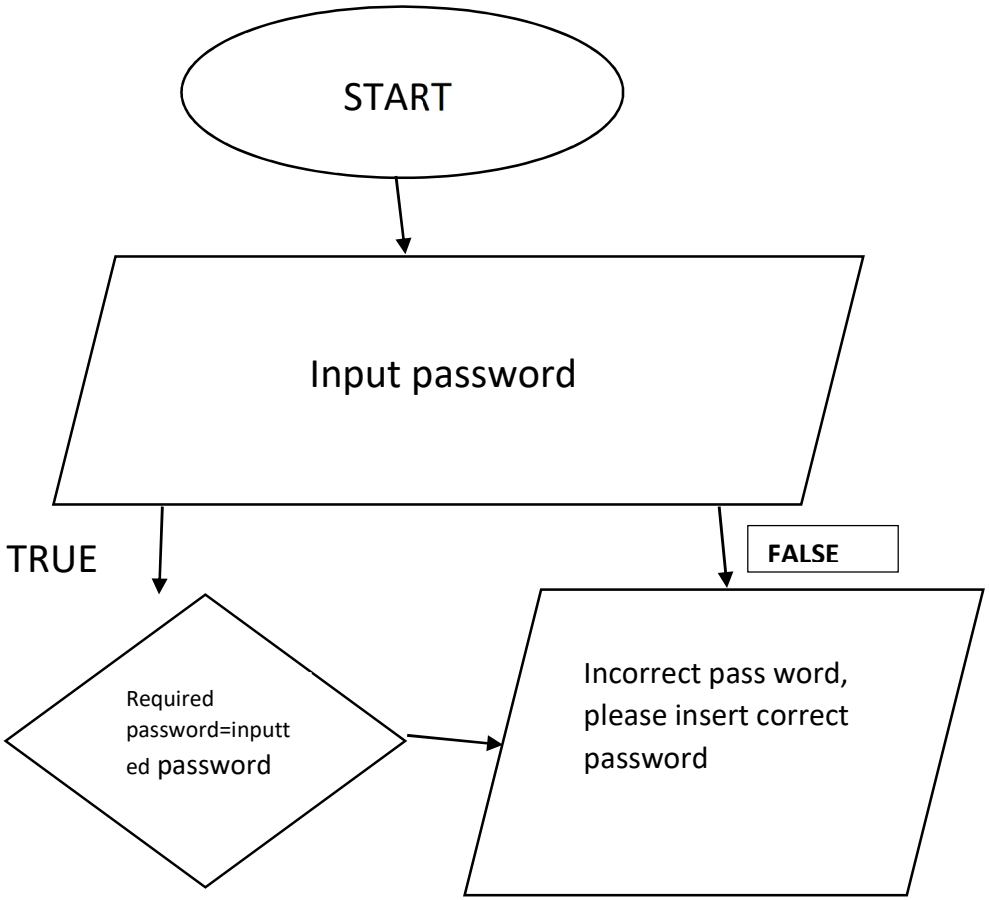
   Else

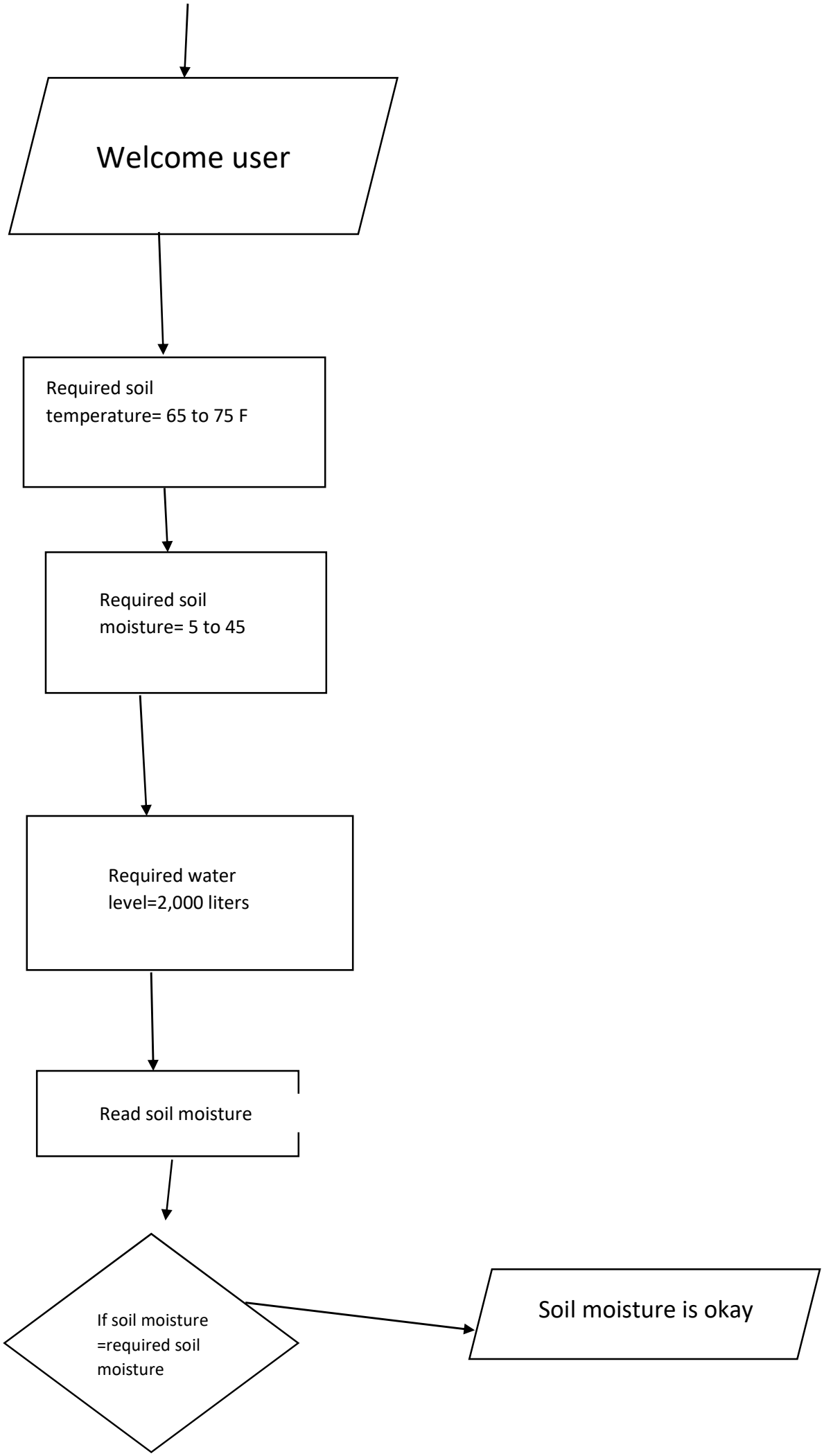
   Print "Incorrect pass word, please insert correct password"

4. Required soil temperature= 65 to 75 F.
5. Required soil moisture= 5 to 45

6. Required water level=2,000 liters
7. Read soil moisture
   If soil moisture =required soil moisture
   Print “Soil moisture is okay”
   Else
   Print “Soil moisture doesn’t match required moisture”
   Trigger irrigation system
8. Read soil temperature
   If soil temperature =required soil temperature
   Print “Soil temperature is okay”
   Else
   Print “Soil temperature doesn’t match required temperature”
   Trigger irrigation system
9. If water level in tank is not equal to required level

   Trigger alarm to indicate water is insufficient
   Else
   Terminate and Stop
10. Stop

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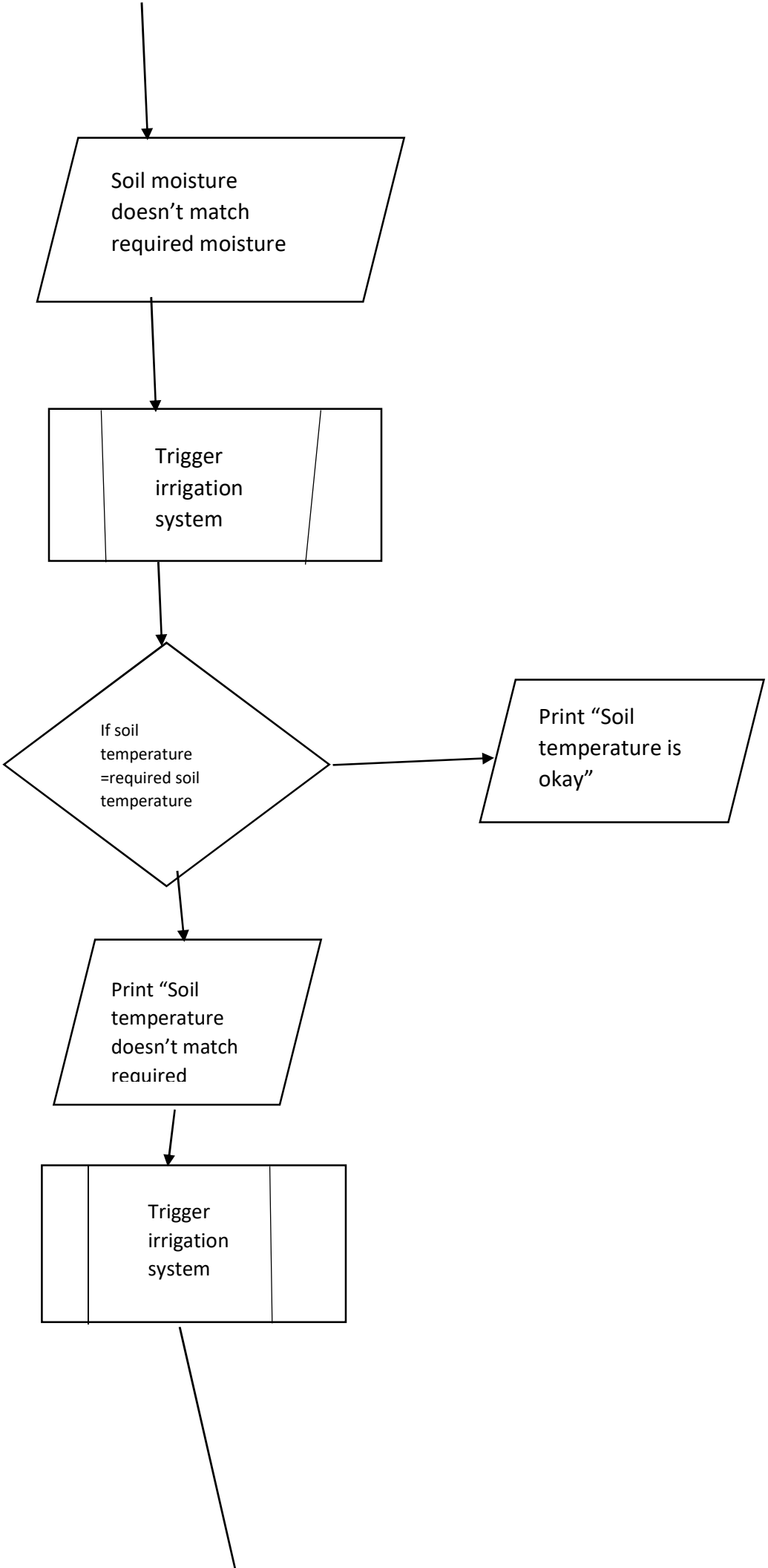
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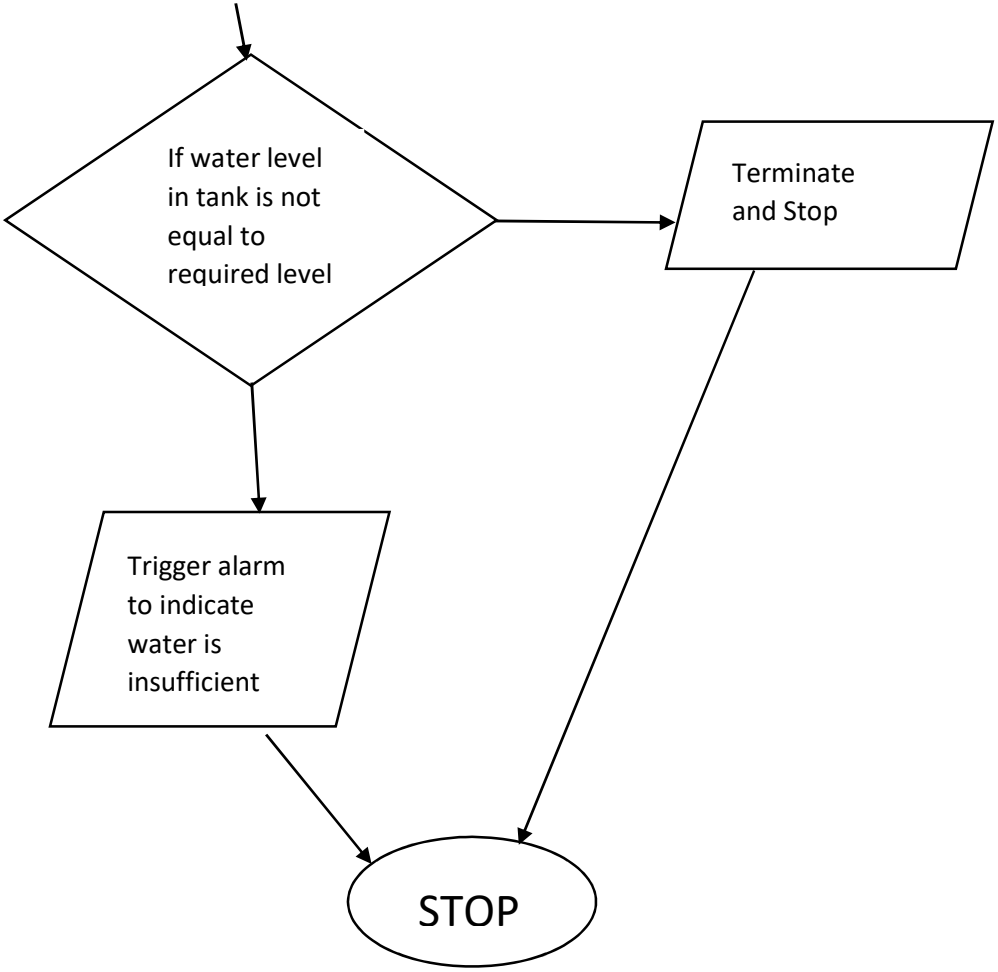
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