TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES VISAYAS
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OFFICE OF THE COLLEGE DEAN

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College of Engineering Technology
Computer Engineering TechnologyDepartment

(End-User)

MIDTERMEXAM
(Term)

COMP 332B–SOFTWARE ENGINEERING
(Subject Code and Descriptive Title)

3ND TERM,2022-2023
(Term) (SY)

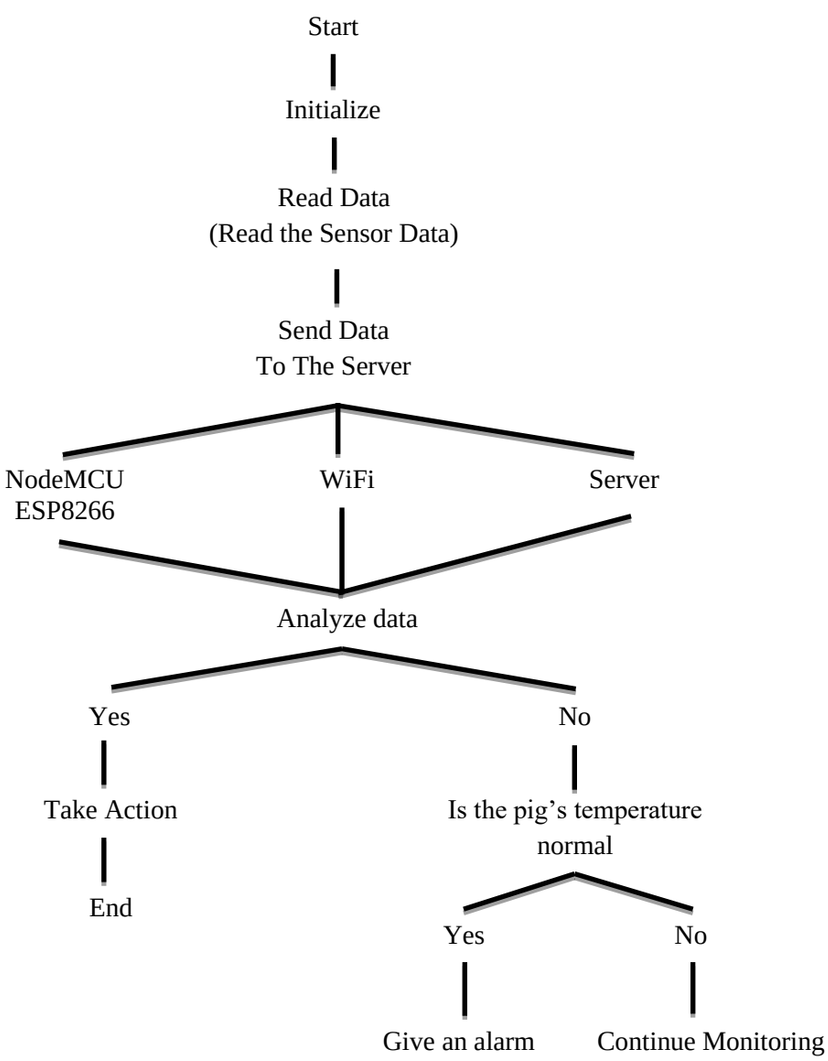
Name: Clarion Reysil M. Yr.& Sec.: TO9-A Score: 65
Last Name First Name M.I.

Instructor: Rodelin B. Tolentino Proctor: _____Date: 6-21-2023

Instructions: Read the instructions carefully. No Erasures.

Test I. Answer the following:

1. Create a Decision Tree based on your thesis project ***[20 points each]***



2. Create a Timeline Charts based on your thesis project ***[20 points each]***

Work Task	***Week 1***	***Week 2***	***Week 3***	***Week 4***	***Week 5***
1.1 Quantifying body temperature for livestock					
1.2 Create an IOT-based health monitoring system for livestock design					
Connect Amg8833 Scanner					
1.3 Test the System					
Verify Accuracy Scanner					
Evaluate Data Quality					
Check System Performance					
Conduct Integration Testing					
1.4 Evaluate					
Validate accuracy and reliability of the collected data					
Test system accuracy and reliability by comparing the collected data					
Develop a testing protocol					
Implement livestock farming					
Milestone: Completed					

3. Make a feasibility study based on your thesis project ***[25 points each]***

Template format:

a. IOT based Health Monitoring System for Livestock

b. Executive Summary

The Internet of Things (IoT) has brought about significant changes in various industries, including the field of health monitoring. Utilizing IoT-based systems allows for real-time monitoring of individuals and livestock, enabling the timely identification of health problems and facilitating decision-making based on data analysis. By employing IoT-based health monitoring for livestock, animal welfare is enhanced, disease outbreaks are minimized, and sustainable farming practices are promoted. However, there are several obstacles to overcome, such as ensuring data privacy, security, interoperability, and cost-effectiveness. In the Philippines, outbreaks of diseases among livestock result in substantial economic losses. One of the challenges faced is distinguishing between normal and abnormal behavior or health conditions, which requires specialized expertise for accurate decision-making. Thermal cameras offer a solution by providing non-contact and non-invasive monitoring through the detection of changes in body temperature. This capability aids in the early detection of health issues in animals, enabling farmers to prevent more significant consequences and improve the overall health and productivity of their livestock.

c. Introduction

Ensuring the well-being of livestock is crucial for the agricultural industry's prosperity. Factors such as inadequate nourishment and challenging environmental conditions can lead to health complications in animals, adversely affecting their productivity and overall welfare. Thermal cameras, initially developed for military applications, have emerged as a non-intrusive diagnostic tool for measuring surface temperature. By incorporating these cameras into the Internet of Things (IoT), it becomes possible to monitor the health of livestock without physical contact. By capturing thermal images, these devices have the capability to detect variations in body

temperature, facilitating the early detection of health issues such as fever or inflammation. This empowers farmers to proactively intervene, enhancing livestock health and productivity while minimizing stress and the transmission of diseases.

d. Background and Context

The Internet of Things (IoT) has brought about a transformative impact on health monitoring, including its application in the livestock sector. By utilizing IoT-based systems, livestock can be monitored remotely and continuously, offering advantages such as early detection of health problems and data-informed decision-making. However, there are obstacles to overcome when implementing IoT-based health monitoring for livestock, such as ensuring data privacy and cost-effectiveness. Livestock in the Philippines are particularly susceptible to disease outbreaks, and effectively managing their health requires addressing challenges related to biosecurity, vaccination, and access to veterinary care. Differentiating between normal and abnormal health conditions in livestock can be a difficult task, further complicated by factors like nutrition and the environment, which significantly influence livestock well-being. Thermal cameras, which offer a non-intrusive diagnostic approach, can be integrated with IoT systems to enable non-contact monitoring of livestock health. These cameras are capable of detecting temperature variations, thereby assisting in the early identification of potential health issues and ultimately enhancing animal welfare.

e. Evaluation Criteria

A group of fifteen seasoned farmers and veterinarians will evaluate the efficiency of an IoT-driven health monitoring system designed for agricultural pigs. The assessment procedure will involve a hands-on examination in which IoT devices will be installed on a selected set of pigs. The participants will actively monitor the health of the pigs and record their observations using a Likert Scale, ensuring a comprehensive evaluation of the system's performance.

d. Evaluation of Solutions

The obtained survey results are analyzed by assigning a descriptive interpretation to the mean score. This interpretation is based on a numeric scale divided into five ranges, each corresponding to a descriptive reading, such as excellent or poor. By utilizing this table, a quantitative analysis of the survey results is facilitated, as it provides a clear understanding of the meaning behind the mean score obtained from the Likert scale.

LikertScale

NumericalScale	DescriptiveReading
5.0	Excellent
4.0	VeryGood
3.0	Good
2.0	Fair
1.0	Poor

*Table2.*This system assigns scores that correspond to specific ratings.

Descriptive Interpretation of the Mean

NumericalScale	DescriptiveReading
4.51-5.00	Excellent
3.51-4.50	VeryGood
2.51-3.50	Good
1.51-2.50	Fair
1.00-1.50	Poor

*Table3.*Quantitative Interpretation of Prototype Evaluation Data

e. Conclusion

In conclusion, the introduction of IoT-based health monitoring systems in the livestock industry has the potential to bring about significant transformations. These interconnected systems utilize devices and sensors to enable real-time and remote monitoring of livestock, leading to early detection of health issues, data-driven decision-making, and improved animal welfare. The advantages of implementing IoT-based health monitoring systems include proactive disease management, precise medical interventions, and efficient utilization of resources. However, certain challenges related to data privacy, security, interoperability, and cost-effectiveness need to be addressed for successful implementation. Through the adoption of robust technological solutions, standardization measures, policy frameworks, and collaborative efforts among stakeholders, the full potential of IoT-based health monitoring systems can be harnessed. This will benefit farmers and livestock by enhancing productivity, profitability, and sustainability in the livestock industry.

d. Final Recommendation

Recommendations for implementing IoT-based health monitoring systems for livestock:

1. Allocate resources to research and development for improving system capabilities.
2. Give priority to ensuring data privacy and security measures.
3. Encourage interoperability and standardization to enable smooth integration.
4. Foster collaboration and knowledge exchange among stakeholders.
5. Offer training and education to enable effective utilization of the systems.
6. Establish supportive policies that incentivize the adoption of IoT-based health monitoring.

By adhering to these recommendations, the livestock industry can optimize the advantages of IoT-based health monitoring, leading to enhanced productivity and sustainability.