Report

CS6006 Distributed, Cloud and IoT Systems

London Metropolitan University Library Sound Alert System

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Writing the report/Structure  
The report should follow a structure e.g., title page, execuFve summary, IntroducFon.  
problem definition, system architecture and design, implementaFon, security, cost, and  
performance consideraFons, findings, conclusions and any other necessary secFons. The  
report should demonstrate a high standard of wriFng with well-structured arguments, criFcal  
analysis, and clear, concise language. The report should use academic sources, including peer-  
reviewed papers, books, and official documentaFon. Cite all references appropriately in your  
report.

Deliverables required  
Report: 2000 words  
PracGcal Demo: 3-5 minutes live pracFcal work demonstraFon during Week no 23 and 24 of  
the module.  
PresentaGon: 5-7 minutes presentaFon to be delivered during the week no 23 and 24 of the  
modules.

READ THE PROPOSAL

INCLUDE SCREENSHOTS, CODE AND WHATEVER APPROPRIATE TO WHAT WE TOOK

23rd March 2025 is where I made the notes and stuff

# Executive Summary

* 200 words
* We want to display best times for students to study in the library where noise levels are at their minimum.
* We checked the decibels in 4 locations over the course of a week from 8am till 5pm
* We used azure, raspberry pi, sound sensor and an analogue to digital converter to display a graph comparing the zones and times as well as an email alert rule so if the staff aren’t present, they would still get the alert showing that it is too high.
* We used Azure , pi OS AND OTHER SOFTWARE
* Components – Sound sensor, ads1115, raspberry pi, jumper wires, mouse, keyboard, monitor,

# Introduction

* 150 words
* We delegated tasks easily
* No issues relating to project or personal conflicts
* We worked in library and in the workshop room
* Our motivation came from that we want to help future students feel motivated to study in the library. We want to push more people to work here as it boosts overall moral and brings students together.

# Problem Definition

* 200 words
* Too noisy and students were recommending against studying the library
* The library staff who weren’t present, didn’t know whether it would be too noisy
* Manual Monitoring of noise is insufficient as the library staff don’t cover all 4 zones
* Alerts to email would help them know its too loud when not there (its sent to all staffs’ email) ¬ graph to represent the quietest areas and times for students

# System Architecture and Design

* 400 words
* Describe each component and what its used for
  + ADS1115 = Analog to Digital Converter (turns noise into calculated decibels
  + KY-037 = Sound Sensor
  + Jumper Wires = Female to Female and we didn’t use the bread board
* Why we used it, how we put it together, what was our thinking,
* the azure setup and pi configurations

# Implementation

* 350 words
* what the physical setup finally looked like. The python programming to make sure it all works properly
* data being sent and collected from raspberry pi to the azure
* include screenshots of it working

# Security

* 150words
* vulnerabilities – anomalies (if one day a mariachi band decides to come in then data would be effected), unauthorised access (email alerts might be intercepted or the sender email could be blocked by physical unauthorized access
* If azure has issues or gets hacked, then the whole system is vulnerable to hackers and/or private data being leaked.

# Cost and Performance Considerations

* 150words
* Screenshots of all the azure plans and costs
* Hasan has lost so much money that he could have actually paid a professional to do the whole thing
* We have used free accounts but if realistically implemented, it would cost X amount
* Costs of the components
  + ADS11115 = £6.99
  + KY-037 = £5.50
  + Jumper Wires (extra) = £7.00
* Talk about accuracy of the sensor and if theres something covering the sensor then the data will be affected, the analogue to digital converter has to be held at all times or soldered (we did not solder it)

# Findings

* 250 words
* Data presented
* Identify patterns or trends
* Analyze and produce insights
* Discuss limitations

# Conclusion

* 150 words
* Summarise main results, reflect on whether project solved the problem, talk about key lessons learnt

# Recommendations and Future Work

* 100words
* Suggest improvements (enhanced accuracy, scalability)
* Areas of future research – expanding the sensor coverage, additional analytics (using power bi),

# References

Add bullshit references like utube vids, forums to help with setups, the links to the components and how to set em up.