EGB240 : Electronic Design

Assessment 2: Digital Voice Recorder

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# Executive Summary

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# List of tables and figures

# Introduction

This report Is a technical documentation of the design process, methodology and other research that took place to complete the designated task.

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Description automatically generatedThe task given was to simulate input analogue conditioning circuitry for the Digital Voice Recorder (DVR). The task is to be carried out on the Teensy 2.0 microcontroller board which is provided by QUT. The analogue input conditioning circuitry that is designed will be interfaced to the microcontroller via the analogue to digital converter (ADC) peripheral as shown below. [1] The analogue input condition circuitry is based on the TL974 operational amplifier which has also been provided.

Fig. X XXXXX [1]

# Background/Literature review

## About Human Speech

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Description automatically generatedThe general human hearing range is from 20 – 20kHz the female voice and male voice ranges however are between the ranges 350Hz to 17kHz and 100Hz to 8kHz respectively. Microphones are designed to measure frequencies from as low as 50Hz up to 20kHz. [2] The figures shown below show the characteristics of human hearing.

Fig. X XXXXX [3]

The human voice produces sound which is a form of energy and oscillates and vibrates which can be converted to voltages form using a microphone.

## Analog and Digital signals

Analog signals are varying amounts of information against time. These include audio, video and other forms of data. The characteristic of analog waves is that the signals are continuous. [4]

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Fig. X XXXXX [1]

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Fig. X XXXXX [5]

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# Body 1

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# Conclusion

# References

[1]*QUT Blackboard*, 2020. [Online]. Available: https://blackboard.qut.edu.au/bbcswebdav/pid-8450378-dt-content-rid-30612278\_1/courses/EGB240\_20se1/EGB240\_Assessment2\_2020\_Rev1.pdf. [Accessed: 15- May- 2020].

[2]"Human Voice Frequency Range - Sound Engineering Academy", *Sound Engineering Academy*, 2020. [Online]. Available: https://www.seaindia.in/human-voice-frequency-range/. [Accessed: 16- May- 2020].

[3]"Human hearing andvoice", *Users.cs.cf.ac.uk*, 2020. [Online]. Available: https://users.cs.cf.ac.uk/Dave.Marshall/Multimedia/node271.html. [Accessed: 16- May- 2020].

[4]"Analog and Digital Signal Explained - Soundbridge", *SoundBridge*, 2020. [Online]. Available: https://soundbridge.io/analog-digital-signal-explained/#:~:text=In%20other%20words%2C%20Analog%20signals,of%20a%20continuously%20variable%20quantity.&text=This%20is%20what%20analog%20represents. [Accessed: 16- May- 2020].

[5]"Difference Between Analog And Digital Signal in Tabular Form | BYJU'S", *BYJUS*, 2020. [Online]. Available: https://byjus.com/physics/difference-between-analog-and-digital/. [Accessed: 16- May- 2020].

# Appendices

## Appendix A - Extension

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