Digital Logical Design Project
2021 Summer

Topics (choose one topic to complete)

1. Basic version

Design and finish a **Music Player** that can play music on EGO1.

I/O requirements: Use keyboard as input unit, 7-segment digital tube and speaker as output unit.(Other I/O can be added)

Basic functional requirements: Press a specific button in the keyboard, then a continuous music will be played in the loudspeaker, and 7-segment digital tubes will display the name of the music at the same time. It is required that at least 3 songs will be built in for demonstration.

Basic functional requirements score: 80 points.

Additional functional requirements: The last song, the next track, pause button, speed up button, slow down button, LED lights and other functions can be added.

2. Advanced version

Design and finish an **Electronic Piano** that can play music on EGO1.

I/O requirements: Use keyboard as input unit, 7-segment digital tube and speaker as output unit.(Other I/O can be added)

Basic functional requirements: Press a specific key in the keyboard, then the corresponding tone(音调) will be played in the loudspeaker, and 7-segment digital tube display the note(音符) of the sound.

Basic functional requirements score: 95 points.

Additional functional requirements: LED lights and other functions can be added.

Presentation

1. One person for each group, finish independently.

2. You need to show your work in the class at 7-8 classes on Friday of the 5th week.

Grading Criteria

1. Complete the **music player** according to the basic functional requirements will get 80 points. For each additional function added, 5 points are awarded.

2. Complete the **electronic piano** according to the basic functional requirements, will get 95 points. For each additional function added, 5 points are awarded.

3. The score over 100 points in the presentation part of the project can be added to the report part of the project or the score of lab, but the overall score of Lab cannot exceed 20% of the total score of the course.

4. If the finished product only has a fully functional waveform and cannot be demonstrated on EGO1, you can get only 60% of the score of basic functional requirements.

5. If the finished product does not have complete functions but only completes part of the modules, corresponding scores will be given according to the specific completion situation.

Submission Requirements

1. Submit before sakai's deadline.

2. Each person shall submit **a package of the whole project** and **a design report**, and the design report shall be completed with the format of the attachment.

The naming format of the package is "2021summer-project-sid-name".

The design report shall be submitted as a PDF file, with the naming format "2021summer-project-report-sid-name.pdf".