



Department of Electrical and Electronic Engineering
BSRM School of Engineering
EEE/ECE 302/301L/EEE283L: Digital Electronics/Digital Logic Design
Open Ended Project/Assignment
Fall 2023

Problem Statement: Suppose you are an employee of a company and you are advised to develop a majority voting system for electing the 2023 Executive body of the company using logic gate, synchronous, combinational, and arithmetic circuit etc. 60 members in the company can cast votes. Consider you have 6 participants for three positions. The three positions are chairman, vice chairman, and secretary. Develop a system so that the majority vote wins and show the winner and vote counting in multiple 7-segment Displays.

In your design/report, you must address the following:

- A) Specification & Requirement
- B) Show the subsystem-level block diagram.
- C) Show a working flowchart
- D) Algorithm development procedure and related calculation, K-map, truth table, timing diagram. E) Methodology
- F) Result/Interpretation with test cases.
- G) Relevant source from where you communicate/take help for completing this.

Instruction: You need to prepare a summary report addressing the mentioned criteria. Also, you need to demonstrate your simulation (proteus) and hardware.

PO related KPI and rubrics:

PO(j)	KPI	Marks	Assessment Tools
Communication: Communicate effectively on complex activities with the (<i>electrical and electronic / electronic and communication</i>) engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.	Write effective technical reports, prepare assignments, design documentation etc. on complex engineering activities	40	Presentation/Report
	Prepare multi-media presentations, posters on engineering activities	30	
	Provide clear instructions to others and receive instructions from others on engineering activities	10	
	Deliver effective oral presentations, participate in technical discussions on complex engineering activities	20	

PO(i)	KPI	Marks	Assessment Tools
Individual work and teamwork: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.	Fulfil duties as an individual, a team member or leader in a multidisciplinary environment	50	Peer Review
	Communicate effectively with other team members	25	
	Share responsibilities by performing research and information gathering activities, participating in report writing and team presentations etc.	25	

I. Individual work and teamwork: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

Performance Criteria	Performance Measure			
	Unsatisfactory (1)		Satisfactory	Exemplary (4)
1. Fulfil duties as an individual, a team member or leader in a multidisciplinary environment	Does not perform any duties of assigned team role	Performs very little duties	Performs nearly all duties	Performs all duties of assigned team role

2. Communicate effectively with other team members.	Rarely performs the required communication and always depends on others' directions	Performs insufficient amount of communication and depends on others' directions	Performs the required communication but depends on others' directions	Always performs the required communication and takes initiatives and proactive roles
3. Share responsibilities by performing research and information gathering activities, participating in report writing and team presentations etc.	Never take responsibilities or participate in activities related to research and information gathering, writing reports or presentations	Perform the assigned work in some cases—often needs reminding	In most cases, complete the assigned task, contribute in research and information gathering activities, report writings, presentations etc. Rarely needs any reminding	Always does the assigned Responsibilities. Enthusiastically complete the assigned activities including research and information gathering, report writing, participate in preparing presentations and presenting it

J. Communication: Communicate effectively on complex activities with *the (electrical and electronic / electronic and communication)* engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Performance Criteria	Performance Measure			
	Unsatisfactory (1)	Developing (2)	Satisfactory (3)	Exemplary (4)

1. Write effective technical reports, prepare assignments, design documentation etc. on complex engineering activities	Poor organization of technical reports, homework. Sections out of order, too much handwritten copy, sloppy formatting. Sometime there is no title page. Undeveloped or irrelevant introduction, unclear about main points and conclusion. Numerous mistakes. Sources not referenced at all or documented with ill formatting. Consistent problems with word choices and sentence structure, leaving the reader unsure of the meaning	Generally good organization of technical reports. Sections are in order, contains the minimum allowable amount of handwritten copy, formatting is rough but readable. Some of the main points and conclusion are not clear or sufficiently stressed. References are accurately documented but some lack of proper formatting. Words and sentences are adequate in general but lack energy; reader has to struggle to keep reading to the end; multiple grammatical mistakes.	Satisfactory organization of technical reports, clear introduction. Main points are well stated and clear conclusion. Some transitions are somewhat sudden. All sources are accurately documented. All sections are in order, formatting generally well but could still be improved. Good writing style with proper choice of words. Smooth and even flow of sentences. Very few grammatical issues	Superb organization of technical reports. Clear introduction, Main points well stated and argued, with each leading to the next point of discussion, clear summary and conclusion. Sections are in order, well formatted, very readable. All sources are accurately documented and properly formatted. Compelling writing style; connects strongly with the reader and keeps him or her engaged right to the end. No Grammatical issues
2. Prepare multi media presentations, posters on engineering activities	Presentation is very blended. The pace and sequence of topics are organized in a random way that ultimately fail to lead up to any clear conclusions;	Some of the ideas are presented well; others are lacking; offers plausible conclusion(s);	Ideas are well organized and help the reader move along; the key points are presented but does not demonstrate in depth understanding; leads up to convincing conclusion(s);	The presentations, posters are very clear and focused. Relevant and quality details give the audience and reader important information and opportunity to get *insight* into the topic.

3. Provide clear instructions to others and receive instructions from others on engineering activities	Unable to give and receive instructions	Can provide instructions to others and understand instructions received from others in irregular basis	Can provide instructions to others and understand instructions received from others in most cases	Can provide clear instructions to others and understand instructions received from others always.
4. Deliver effective oral presentations, participate in technical discussions on complex engineering activities	Very poor delivery, hard to understand or inaudible. Reads most of the presentation from slides or notes with no eye contact. Not aware of audience reactions	Occasionally inaudible, low voice of delivery. Occasional eye contact with audience but mostly reads presentation. Some distracting filler words and gestures in the delivery. Some awareness of audience reactions. Very brief responses to the questions	Good clear voice, generally effective delivery; minimal distracting gestures, etc., but somewhat monotone; generally aware of the reactions of the audience; maintains good eye contact with the audience while speaking and answering questions	Very clear, natural, confident delivery that conveys the message, excellent use of volume and pace. Keenly aware of the reactions of the audience. Always engaged the audiences throughout the presentation; modifies material as required based on the questions asked by the audience and their comments.