BTE2313 PROJECT
Group (20%) + Individual (5%)

Overview

The project is about applying C++ Programming in solving problems related to Physics (BTU1113), or Electricity and Electronics Fundamentals (BTE1113). There are 2 parts of the project:

      1) FLOW CHART and CODES (50 marks = 20%)

      2) HANDS-ON (20 marks = 5%) – will be evaluated individually

Every group is given 5 minutes to present your project with all available features and detail description of your flow charts. Please submit your **codes (.cpp file)** and **flow charts**. Demo/present your project according to your group in Week #14.

Individual evaluation will be done immediately after the group presented/demoed their project. You are going to be asked to create small codes, based on your project. Be prepared!

Requirements

Write a program that solves a problem related to one of the chapters from 2 courses (BTU1113 and BTE1113) as per listed below:

      i.   Measurements
      ii.   Kinematics
      iii.   Newton's law of motion
      iv.   Static equilibrium
      v.   Work, energy and power
      vi.   Fluid mechanic
      vii.   Magnetism
      viii.   Energy
      ix.   Series Circuit
      x.   Parallel Circuit
      xi.   Series-Parallel Circuit

Refer to your syllabus on both courses for details on the subchapters included.

Your program **MUST** make use of **ALL** features listed below:

i.   Arithmetic and Logical Expression

ii.   Control Structures (Decision **AND** Repetition)

iii.   Functions

iv.   Arrays

Codes

1. At the top of your C++ source code, include a documentation that may resemble the following:

```
/*************************************************************
BTE2313          PROJECT

Programmer:

Date:

Purpose: This program is to . . .
*************************************************************/
```

2. Include line documentation. There is no need to document every single line, but logical "chunks" of code should be preceded by a line or two that describes what the "chunk" of code does.

3. Make sure and **test** your program with **all possible inputs**

Evaluation

There will be 4 parts of evaluation:

     i.   Codes Evaluation (30 marks)

     ii.   Flow Chart Evaluation (20 marks)

          **Both codes and flows chart contributes into 20% of your final grade

     iii.   Hands-on Evaluation (20 marks) – 5% (individually assessed)

Rubrics for each evaluation part are given, and BE SMART by trying to fulfil the requirements stated. Good luck!!

1- Codes Evaluation – 30 marks:

ITEMS	MARKS
iostream, iomanip, others	Other libraries: 2 marks Basic library: 1 mark
Readability	Easy to read: 1 mark Poorly organized: 0 mark
Variables	Good names: 2 marks Appropriate names: 1 mark Bad variable name: 0 mark
Comments	Comments are properly placed: 2 marks Unnecessary/very minimum comment: 1 mark No comment at all: 0 mark
Proper indentations	Yes: 1 mark No: 0 mark
Loop (*for, while* or *do..while*) (2 statements or more)	2 marks
Decision (*if..else,* or *switch..case*) (2 statements or more)	2 marks
Functions (2 functions or more, 1 mark for each function)	Maximum: 4 marks
Array (2 arrays or more, 1 mark for each array)	Maximum: 3 marks
Special/creative features	2 or more feature: 2 marks 1 feature: 1 mark 0 feature: 0 mark
Displayed Outputs	Precisely aligned and Creatively displayed: 3 marks Precisely aligned: 2 marks Some misaligned: 1 marks Unaligned: 0 mark
Complexity of problem to be solved:	Complex: 3 marks Intermediate: 2 marks Simple: 1 mark Same with other group: **-1 mark**
Submission on time	Yes: 1 mark No: **-2 marks**
Could the program be executed?	Yes: 2 marks Yes, but with run-time/logic error: 1 mark No: **-2 marks**

2- Flow Chart Evaluation – 20 marks:

CATEGORY	4	3	2	1
Quality and Accuracy of Information	Steps are very specific to process and accurate	Some details are not relevant to process and chart contains a few inaccuracies	Details are somewhat ambiguous and/or somewhat inaccurate	Unable to find specific details and/or details are mostly inaccurate
Color and Clip Art (Flowchart Symbols)	Your clip art is well placed and compliments the flow chart. Correct symbols are used.	Clip art is neat with a good layout. Good use of color. Correct symbols are used.	Symbols are placed randomly and may or may not relate to the flow chart. Color may be distracting (too much or too little). Incorrect symbols are used.	No clip art used or very little color used. Color is very messy or does not compliment the flow chart at all. Incorrect symbols are used
Steps in Flow Chart	The flow chart is logical and the directions help the reader to (adequately) follow the task.	The flow chart is logical and the directions allow the reader to follow the task.	The flow chart is present but there is a question as to which step goes in which order.	There is no logic to the flow chart. The flow chart has no order and is hard to understand.
Arrows	Arrows are present in the flow chart that guide the reader through the steps. The arrows compliment the chart.	Arrows are present in the flow chart and guide the reader through the steps.	Arrows are present, but they do not guide the reader or there are not enough arrows.	There are no arrows.
Organization and Layout	Good organization, flow is logical, and easy to follow	Organized, flow for the most part is clear	Some organization, flow slightly unclear	Not organized, flow makes no sense and is not clear

3- Hands-On Evaluation – 20 marks:

Bring your own laptop installed with DevCpp, and your codes for the project.

CRITERIA	LEVEL OF ACHIEVEMENT				
	0	1 Inadequate	2 Emerging	3 Developing	4 Good
Body of Codes	Failed to demonstrate preparations of basic C++ program		Demonstrate the preparations of C++ program adequately		Demonstrate the preparations of C++ program effectively
Theory/ Knowledge	No theoritical knowledge is observed		Some knowledge or information is provided but missing all major points		Good knowledge is observed, missing some minor points
Efficiency	Failed to demonstrate the given task		Partly efficient, but not effectively and neatly demonstrated the given task		Efficiently and effectively but not neatly demonstrated the given task
Variable declarations	Failed to declare any variable		Partly correct usage of variable names are demonstrated		Good usage of variable names are demonstrated
Troubleshooting	Failed to troubleshoot any problem		Acceptable troubleshooting techniques are demonstrated		Good troubleshooting techniques are demonstrated