SITWARE Events - Feb 2021

Problem Statements for Hackathon Event

Rules:

1. The problem solution should be submitted in the appropriate format within the given deadline.(Refer our website for deadline and submission procedure)
2. Participants are free to attempt and submit any number of problem statements. Atleast one submission is expected. The student with most number of correct solutions will be awarded.
3. Every solution should have a README text file which should explain how the solution works and explain how to use the solution to obtain the output.
4. Partial solutions will be accepted. The marks given for the submission will be based on how closer the submission is to the expected outcome.

Contents:

Problem Statement ID : 1

Category : Core Programming

For this project, you are required to find out the best deals available for a given cart of products. You will be given the details of prices of different products at different stores. You have to find the best deals for each product and try to minimize the total prize of the cart.

The price data of stores will be in .csv format. You have to get all the items in the cart as input from the user.

The expected output would be a list of all the products in the cart with its lowest possible price of each item and the name of the store offering the lowest price for that item.

You are free to use any programming language and use any supporting libraries.

Example:

Dataset:

	Rice (1KG)	Hamam Soap	Colgate Toothpaste (50GM)	Tomato (1KG)
Suguna Store	40	27.8	22	20
Karthick Stores	39	28	22	18
Raghuvran Mart	39	25	20	22

Cart(input to be obtained from user) : Rice (1KG), Tomato (1KG)

Desired output :

(Lowest price of each item with the names of shops that are offering the lowest price)

Rice - RS.39 - Karthick Stores, Raghuvaran Mart

Tomato - RS.18 - Karthick Stores

You can download the actual dataset from our official website.

References:

https://www.geeksforgeeks.org/reading-csv-file-java-using-opencsv/

https://www.geeksforgeeks.org/working-csv-files-python/

Problem Statement ID : 2

Category : Web Development

You are the head for the event organization team. Create a website for your event that does the following.

Requirements:

1. Your Website should contain the following pages
    i. Introduction page
    ii. Event details page
    iii. Participant registration page
    iv. Admin Login Page

2. Participants should be able to provide details like name, mobile no, Email ID, and Participating events etc.
3. Admins should be able to login with their username and password and be able to look at the details of all registered students.

You are free to use any language for backend, any type of database for storing data and any server to host your website.

Some free servers you can host your files at:

1. Github pages
2. 000webost

Your submission should contain the README text file with all the instructions on how to execute your project, the entire codebase of your webpage and a text document containing the link which can be used to visit your webpage.

References:

https://www.sqlitetutorial.net/sqlite-php/
https://firebase.google.com/docs/web/setup

Problem Statement ID : 3

Category : Computer Architecture

Create a 4 bit Adder - Subtractor using logic gates.

Requirements:

1. The entire logic diagram should be drawn.
2. The components(Logic Gate ICs) should be assembled as per the circuit in tinkercad simulator (visit tinkercad.com and go to circuits to do the simulation)

This project should have a set of four logical inputs representing one number(0-15), another set of four logical inputs representing another number(0-15) and a mode selector logical input which determines whether the operation to be performed is Addition or Subtraction.

The output will be a set of logical outputs representing the sum/difference of the given two numbers.

The submission should contain the following:

1. **The link**(click the share button in tinkercad to get the link) to the project that you have doe in tinkercad and

2. **The .brd file of your project**(use the 'Export' option in tinkercad to get the .brd file)

References:

tinkercad.com [goto dashboard -> circuits]

https://www.electronicshub.org/binary-adder-and-subtractor/

Problem Statement ID : 4

Category : App development

Create a mobile app on **any one** of the following domains. Choose any one of the below statements and create a mobile application for the same.

1. Create a mobile app that can create notes, save them locally and enables users to search keywords in saved notes **[OR]**

2. Create a full-fledged gallery app that can view images and videos in local storage **[OR]**

3. Create a calculator that can perform all the basic calculations, advanced scientific calculations and can parse mathematical regexes and solve them.

The submission should have the apk file and the source code for the app. You can use any framework(Java, Flutter, React Native etc) to build apps.

Problem Statement ID : 5

Category : Game Development

You are free to develop any game you wish and use any platform(Unity and C#, Unreal engine and C++, PyGame, etc) you want.

The submission should contain the runnable game file and the source code to the game file.

References:

https://www.freecodecamp.org/news/the-ultimate-beginners-guide-to-game-development-in-unity-f9bfe972c2b5/

https://realpython.com/pygame-a-primer/