King Abdulaziz University
Faculty of Computing and Information Technology
Spring 2022 – 2nd Term 2022

Course Code: CPCS 203 Course Name: Programming II

Assignment # 1 (Best App Winner)

Assigned Date	**Sunday, 06/02/2022**
Delivery Date and Time	**Saturday, 26/02/2022 @11:00PM**

WARNING:

- This program must ONLY be submitted on the Blackboard!
- This project worth 10% of the overall module marks (100%).
- NO assignment will be accepted after 11:59 pm for any reasons.
- Student can submit their assignments between 11 and 11:59 PM but in this case it will be consider as late submission, and they will lose 2 points from the total mark of the assignment.
- For discussion schedule, check the teacher's name, date and time on the blackboard. **Further information is provided in the course syllabus.**

Objectives:

- Learn how to use and implement multidimensional array.
- Performing procedure on array elements.
- Learn to use and implement String, File I/O (Reading/Writing from/to files).

Delivery:

- Submit your assignment on the Blackboard ONLY.
- Make sure to add your names / IDs / Section / course name / Assignment number, as comment at the beginning of your program.

Description

What is Best App Winner?

Best App Winner is a software program that universities will utilize to automate their voting process for the best App. Students will be requested to create an app, and this app will be voted on by app users based on app categories such as [**creativity, response speed, reliability, availability, and ease of use**], as illustrated in figure 1. The project's details are listed below.

The Data Creation of the Program

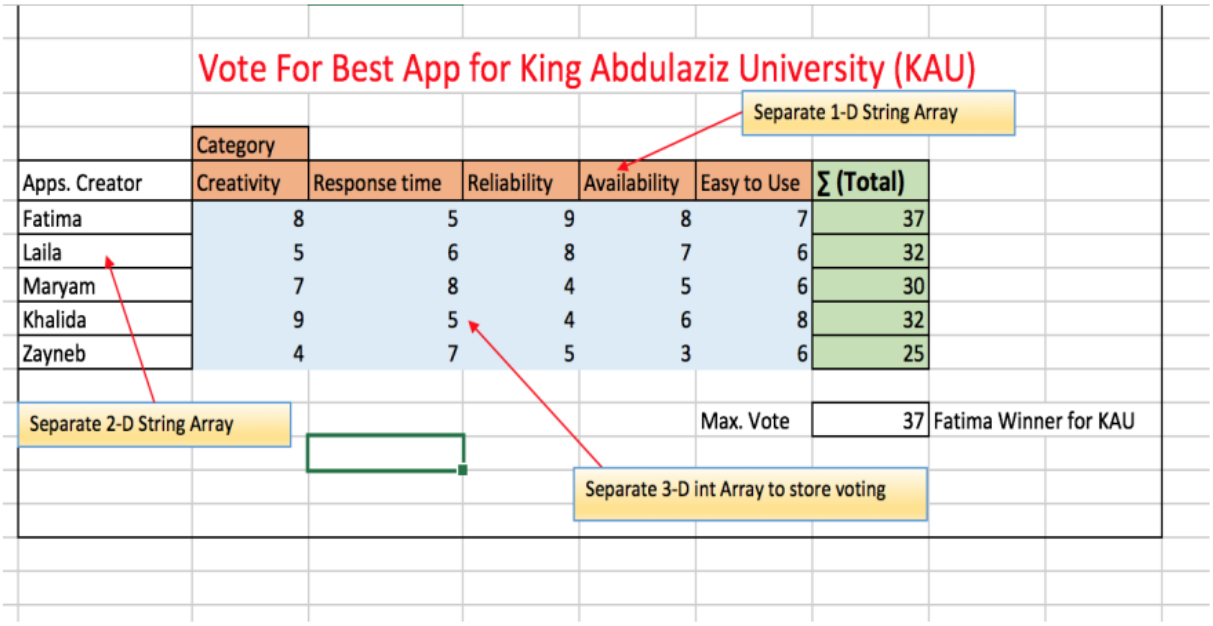


Figure 1

As shown in Figure 1, you will need to create different arrays to hold all of the data utilized in the application; for example, you will need a one-dimension array to store the app category, more details later in the program specification.

Best App. Winner program must store the following data:

- ✓ Saudi Arabian Universities name.
- ✓ Name of the students who participated in the Contest from different Universities.
- ✓ Dates of the contest.
- ✓ Days of the contest.
- ✓ Contest Categories.
- ✓ Participants score based on the contest categories.

This software also generates various results based on the above data saved in the system, for example it generates winner list from each university based on different Categories, it also, shows the contest details etc.

Basic Requirements:

- The program must ***read the data*** from a text file called "input.txt" that follows a specific pattern. If the file doesn't exist, print a message to let the user know what happened.- see Input file for more details.
- The program must generate a ***text file as the output*** called "print.txt" that contains the results of the commands written in the input file – see print file for more details.
- The program must load data dynamically from the given text file "input.txt" and ***user is not involved*** in data entry.

The Initial Procedure of the Program

You will use File I/O concepts to read given file [input.txt]. Make sure the file exist or display a message that the file does not exist. The file consists of:

- 7 integers to determine array size for **university names**, **days name**, **date of the contest**, **students name**, **Apps award criteria** and **App contestant result** [see input.txt file]:

- ✓ The first number (4) in the file refers to the number of universities to be stored in the System [means, system will accept ONLY FOUR universities name.
- ✓ The second number (4) refers to the number of days and dates to be stored in the system [means system will accept ONLY 4 days and dates]
- ✓ The third number (4) refers to the number of students participating in the contest from each university for example King AbdulAziz University.
- ✓ The fourth number (3) refers to the number of students participating in the contest from King Saud University.
- ✓ The fifth number (5) refers to the number of students participating in the contest from King Khalid University.
- ✓ The sixth number (4) refers to the number of students participating in the contest from King Fahad University.
- ✓ The seventh number (5) refers to the number of contest criteria.

The Data Creation of the Program

- Create a **Single Dimension Array** to store Universities name (See Table 1) and create a method that read names of universities from given input.txt file and stored Universities name in an array.

Table 1. Universities' information

university_Name
King AbdulAziz University
King Saud University
King Khalid University
King Fahad University

// String array for the Universities name

- Create **two Single Dimension Array** to store Day and Date of the contest (See Table 2), and create two methods, one that read days and date of contest from given input.txt file and stored in respective arrays.

Table 2. Day and Date of Contest information

day_Contest	date_Contest
Sunday	9/21/2015
Monday	9/22/2015
Tuesday	9/23/2015
Wednesday	9/24/2015

// String array for the Day of Contest
// String array for the Date of Contest

- Create a **Two Dimensional Array** to store Students name participated in the contest from all the universities (See Table 3), and create a method, that read all names from given input.txt file and store in respective 2Darrray.

Table 3. Students name participated in the contest of all universities

ANAS SHAKER BARAK	MOHAMMED ALI MOHAMMED ALGHAMDI	MAZEN MANSOUR HAMAD ALJEHANI	KHALID AUN ALARIANI	
AHMAD WALEED AGEELI	MESHARI YOUSEF ABDUALAZIZ ALTURKI	AHMED WADEA OMAR ALJOHANI		
MESHAL ALI MOHAMMAD AL MOSAED	GHASSAN AHMAD MOHAMED SIYAMAK	KHALID ATEEQ ABDULLAH ALMALKI	SUHAIB HAMDAN MOHAMAD AL-SHARIF	BAHAA SAHL SADAGA GAZZAZ
FAISAL SOUD ABDULAZIZ ALMUTIRI	WALEED SULIMAN HUMOD ALBALAWI	ABDULREHMAN AHMED MOHAMMED BASHEIKH	FAISAL AWAD ALI ALSHAHRI	

// String Two Dimensional Rigid array to store students name who participated in the contest from each university.

Note: In table 3 each ROW represents name of students participated in the contest from every university, for example ROW ZERO represent all the students of King AbdulAziz University and ROW ONE represent all the students of King Saud University and so on, further concept is shown in Table 4. **Data shown in the tables may be different from given data in the input.txt file.**

Table 4. Relationship between Universities and Students

	Student [0]	Student [1]	Student [2]	Student [3]	Student [4]
King AbdulAziz University	ANAS SHAKER BARAK	MOHAMMED ALI MOHAMMED ALGHAMDI	MAZEN MANSOUR HAMAD ALJEHANI	KHALID AUN ALARIANI	
King Saud University	AHMAD WALEED AGEELI	MESHARI YOUSEF ABDUALAZIZ ALTURKI	AHMED WADEA OMAR ALJOHANI		
King Khalid University	MESHAL ALI MOHAMMAD AL MOSAED	GHASSAN AHMAD MOHAMED SIYAMAK	KHALID ATEEQ ABDULLAH ALMALKI	SUHAIB HAMDAN MOHAMAD AL-SHARIF	BAHAA SAHL SADAGA GAZZAZ
King Fahad University	FAISAL SOUD ABDULAZIZ ALMUTIRI	WALEED SULIMAN HUMOD ALBALAWI	ABDULREHMAN AHMED MOHAMMED BASHEIKH	FAISAL AWAD ALI ALSHAHRI	

- Create a **Single Dimension Array** to store Contest_Criteria (See Table 5), and create a method that read data from given input.txt file and store in respective array.

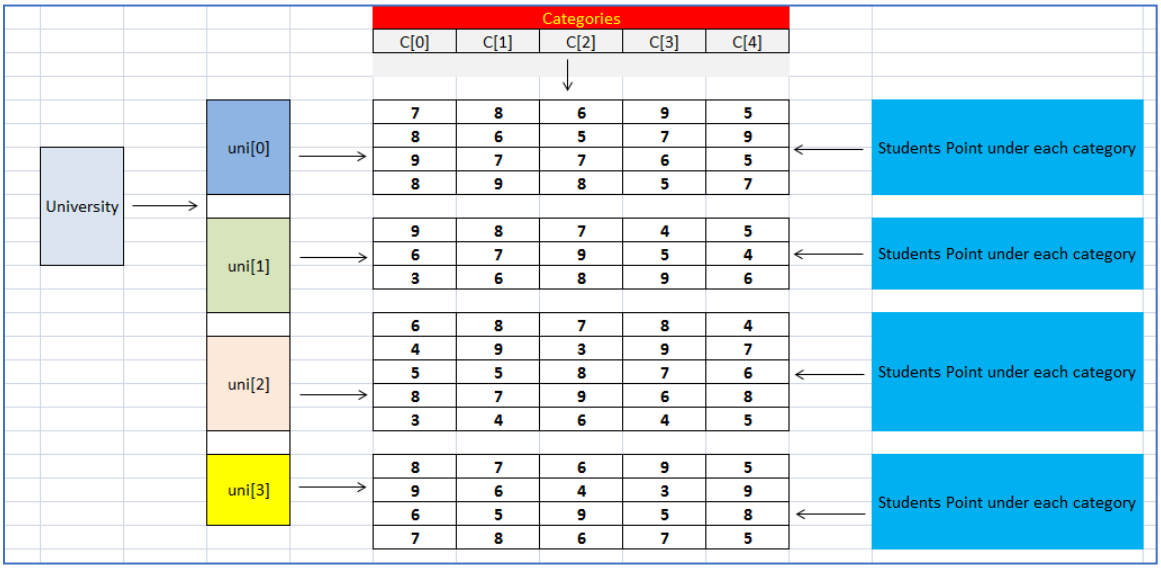
Table 5. Contest_Criteria

Contest_Criteria
Usability and Accessibility
Platform Compatibility and Portability
Security
Functionality and Correctness
Performance and Efficiency

// String array for the Contest_Criteria

- Create a **3-Dimentional array** to store points scored by each student in different category from each university (See Table 6).

Table 6. Students point stored in 3 Dimension Array



The 3-Dimensional array virtually link university array. Each University has number of students participated in the contest and they scored points based on the category, so this 3 Dimensional array have different rows and columns based on the total students participated of the university and contest category. Make sure when you create this array check how many students are participating of that university. Figure 1 and figure 2 illustrates the structure of the 3D array.

University [0]	Cat. A	Cat. B	Cat. C	Cat. D	Cat. E
ANAS SHAKER BARAK	7	8	6	9	5
MOHAMMED ALI MOHAMMED ALGHAMDI	8	6	5	7	9
MAZEN MANSOUR HAMAD ALJEHANI	9	7	7	6	5
KHALID AUN ALARIANI	8	9	8	5	7

Figure 1 The structure of the 3D array

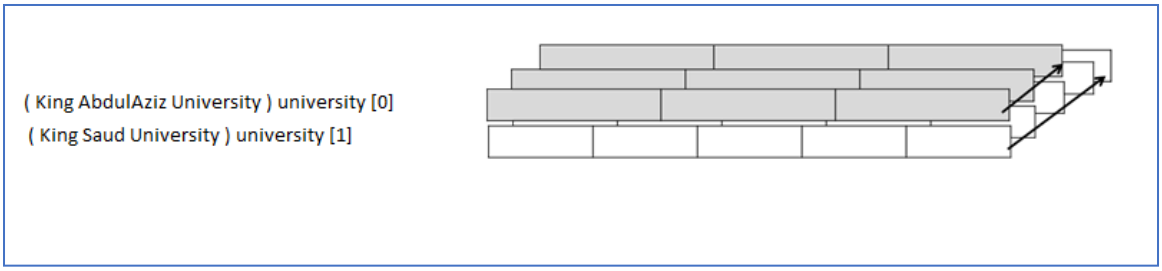


Figure 2 The structure of the 3D array

// Three Dimensional Array

The commands you will have to implement are as follows

- **addUniversity**- Your program must read universities name and store in an array to be used in the system. [see input.txt]

  addUniversity
  King_AbdulAziz_University King_Saud_University

  In above line **addUniversity** is a command & **King_AbdulAziz_University**, **King_Saud_University** are the universities name.

- **addDays** - Your program must read contest days and store in an array to be used in the system. [see input.txt]

  addDays
  Sunday Monday

  In above line **addDays** is a command and **Sunday Monday** are name of days contest conducted.

- **addDates** - Your program must read contest dates and store in an array to be used in the system. [see input.txt]

  addDates
  09_22_2019 09_23_2019

In above line **addDates** is a command and **09_22_2019 09_23_2019** are dates of contest.

- **addStudentsName**– Your program must read participants data and store in an array to be used in the system. [see input.txt]

addStudentsName
ANAS_SHAKER_BARAK MOHAMMED_ALI_MOHAMMED_ALGHAMDI
MARYAM_MANSOUR_HAMAD_ALJEHANI KHALID_AUN_ALARIANI

In above line **addStudentsName** is a command and

ANAS_SHAKER_BARAK MOHAMMED_ALI_MOHAMMED_ALGHAMDI
MARYAM_MANSOUR_HAMAD_ALJEHANI KHALID_AUN_ALARIANI are names of students of the King AbdulAziz University participating in the contest.

[see input.txt / Table 4] and think]

- **addAwardCriteria** – Your program must read contest Categories and store in an array to be used in the system. [see input.txt]

addAwardCriteria
Usability_Accessibility Platform_Compatibility_Portability

In above line addAwardCriteria is a command and Usability_Accessibility Platform_Compatibility_Portability are contest categories.

- **addScore**– Your program must read participants score and store in an array to be used in the system. [see input.txt]

addScore

7 8 6 9 5

In above line addScore is a command and **7 8 6 9 5** scores of participants based on the contest categories.

[see input.txt / Figure 1 and 2] and Think]

- **printcontestDetails**- Your program must automatically generate report based on **contest detail** and save in the output file. [see print.txt]
  // Method to Print Contest Details

- **printcontestdetailResults**- Your program must automatically generate report based on **contest score for each university** and save in the output file. [see print.txt]
  // Method to Print Contest Detail Results

- **printwinnerAwardByEachCriteria**- Your program must automatically generate report based on winner of each **university based on contest categories** and save in the output file. [see print.txt]

  // **Methods** to print winners from each university based on the contest categories.

- **Quit** - This option will be used to Exit from the System.

Very Important Note: [YOU MUST GENERATE EXACTLY SAME OUTPUT FILE AS GIVEN TO YOU (PRINT.TXT)]

Output File Pattern

The output file should include all the results of the commands that have been read from the input file [input.txt]. Your program must generate output in a similar format to the given sample output file [print.txt].

Note: You must create a supporting method String textSplit(String text) to return a text by removing _ char from the given text.

For example, given text to the method is King_AbdulAziz_University and the method return King AbdulAziz University.

Important Notes:

- Your Code, output, results etc. must be in a readable form.
- Organize your code in separate methods.
- Repeat the program until Quit command is read by your program.
- Use comments in your code.
- Use meaningful variables.
- Use dash lines separator between each method.

Deliverables:

You must submit only one java file. The file name must be like BA_1110349.java where BA is your section, 1110349 your ID.

Good Luck and Start Early!