	Assignment No. 2	**Total Marks: 20**
VU Virtual University	**Semester: Fall 2020**	**Due Date:**
	CS201 – Introduction to Programming	**18-12-2020**

Instructions

Please read the following instructions carefully before submitting the assignment:

It should be clear that your assignment will not get any credit if:

- o *Assignment is submitted after due date.*
- o *Submitted assignment does not open or file is corrupt.*
- o *Assignment is copied (From internet/students).*

Software allowed to develop Assignment

- **Dev C++**

Objectives:

In this assignment, the students will learn:

- *How to fill / populate a two-dimensional array using given source data.*
- *How to write user defined functions and pass an array to them as parameter.*
- *How to use if statement and do while loop.*
- *How to calculate the percentage in elements of array.*
- *How to display array elements.*

Assignment Submission Instructions

You are required to submit only **.cpp** file on the assignments interface of CS201 at VU-LMS.

Assignment submitted in any other format will not be accepted and will be graded zero marks.

As all of you know that presidential election was conducted in USA recently, and the entire world had an eye on the results. There were three main candidates; Donald Trump from Republicans party, Joe Biden from Democrats and Jo Jorgensen as an independent candidate. Though the strong candidates for this presidential election 2020 were Trump and Biden, and there was tough competition among them. Similarly, some states of USA have played the role of Crucial states (Winning states) to win the election. In this assignment you will be provided with data from USA election 2020 and you have to write C++ program according to the given data.

Problem Statement

Write a menu in C++ which should show the state code and name of winning states at the start of application:

1. Press 1 for Florida.
2. Press 2 for Georgia.
3. Press 3 for Michigan.
4. Press 4 to exit.

Source data:
(Use two dimensional array to store following data)

State Code	Joe Biden Votes	Donald Trump Votes	Jo Jorgensen Votes	Total Votes
1	5,284,453	5,658,847	70,046	11,013,346
2	2,465,781	2,455,428	61,894	4,983,103
3	2,790,648	2,644,525	60,287	5,495,460

[above dummy data is for assignment purpose only]

Instructions to write C++ program:

➢ Write functions to calculate %age of Joe Biden votes, %age of Donald Trump votes and %age of Jo Jorgensen votes in specific State. Following function names should be used for consistency.

To display all data in matrix form	showElements( );
Percentage of Joe Biden votes	PercentageBiden ( ):
Percentage of Donald Trump votes	PercentageTrump();
Percentage of Jo Jorgensen	PercentageJorgensen();

Sample Output:

First, user will call the *showElements()* method to display all the source data in matrix form. Then, it will display a menu to calculate the percentage of Biden, Trump and Jorgensen votes for specific state:

```
Source Data:

States          Biden Votes     Trump Votes     Jorgensen Votes Total Votes

1               5284453         5658847         70046           11013346
2               2465781         2455428         61894           4983103
3               2790648         2644525         60287           5495460


Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4:
```

If user presses 1 then it will show the percentage of Biden, Trump and Jorgensen votes from state Florida.

```
States          Biden Votes     Trump Votes     Jorgensen Votes Total Votes

1               5284453         5658847         70046           11013346
2               2465781         2455428         61894           4983103
3               2790648         2644525         60287           5495460


Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4: 1
_____
Percentage of Jo Biden votes is: 47.9823

Percentage of Donald Trump votes is: 51.3817

Percentage of Jo Jorgensen votes is: 0.63601

Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4:
```

If user presses 2 then it will show the percentage of Biden, Trump and Jorgensen votes from state Georgia.

```
Percentage of Jo Biden votes is: 47.9823

Percentage of Donald Trump votes is: 51.3817

Percentage of Jo Jorgensen votes is: 0.63601

Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4: 2
_____
Percentage of Jo Biden votes is: 49.4828

Percentage of Donald Trump votes is: 49.2751

Percentage of Jo Jorgensen votes is: 1.24208

Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4:
```

Similarly, If user presses 3 then it will show the percentage of Biden, Trump and Jorgensen votes from state Michigan.

```
Percentage of Jo Biden votes is: 49.4828

Percentage of Donald Trump votes is: 49.2751

Percentage of Jo Jorgensen votes is: 1.24208

Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4: 3
_____
Percentage of Jo Biden votes is: 50.781

Percentage of Donald Trump votes is: 48.122

Percentage of Jo Jorgensen votes is: 1.09703

Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4:
```

If the user enters option other then 1 to 4. Following messages display:
Choice should be between 1 and 4
Invalid choice, please select again:

```
Percentage of Donald Trump votes is: 49.2751

Percentage of Jo Jorgensen votes is: 1.24208

Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4: 3
_____
Percentage of Jo Biden votes is: 50.781

Percentage of Donald Trump votes is: 48.122

Percentage of Jo Jorgensen votes is: 1.09703

Press the state code to calculate percentage of Trum, Biden and Jorgensen votes

Press 1 for Florida.
Press 2 for Georgia.
Press 3 for Michigan.
Press 4 To Exit

Please select an option, use numbers from 1 to 4: 5

Choice should be between 1 and 4
Invalid choice, please select again:
```

Wish you Good Luck!

Lectures Covered: *This assignment covers Lecture #* *07-15.*

Deadline: *The deadline to submit your assignment solution is* **18-12-2020**. *Your assignment must be submitted within the due date through VU-LMS. No assignment will be accepted through email after the due date.*