*2022-2023*

**OSU Supplemental Instruction Session Planning Form**

SI Leader: \_\_\_\_Thomas Morton\_\_\_\_\_\_\_\_\_ Week of Semester:\_\_\_\_\_\_\_\_11\_\_\_\_\_\_\_\_\_\_\_

Course: \_\_\_\_\_\_\_\_CS 1113\_\_\_\_\_\_\_\_\_\_\_\_ Instructor: \_\_\_\_\_\_\_\_Dr. Crick\_\_\_\_\_\_\_

Session Objectives

1. Students will review how to create and use two-dimensional arrays.

2. Students will review how loops factor into populating arrays with data.

3. Students will apply concepts of grouping data with arrays to create a simple matrix addition and subtraction calculator.

Professor Meeting Notes:

Dr. Crick and I discussed the necessity for students to understand multidimensional arrays for their final project. As this week’s objective is to finish a gameboard printout that requires a two-dimensional array, I was suggested to review setting up and populating them in detail.

Opening/Introductory Activity

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| Activity Name:  Conceptualizing the Process | Session Objective(s) Met:  Objectives 1 & 2 | Time Allotted:  5 minutes | Materials Needed:  none | Targeted Learning Style(s):  Audial | Bloom’s Levels Used:  Evaluating  Analyzing  Applying  Understanding  Remembering |
| Explanation/Notes:  Going around the room, each participant will think of one situation where they might organize data using a two-dimensional array. Ideas for inspiration are situations where we may have collections of collections, such as the number of amusement park rides a family of 5 can ride (X number of rides for Y number of family members).  Afterwards, the participant will conceptualize how they would proceed to iterate through this two-dimensional array, what types of looping statements, and if there are any conditions where the iteration would need to exit prematurely (such as the park closing in the above example). | | | | | |

Main Session Activity 1

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| Activity Name:  The ‘Field Test’ | Session Objective(s) Met:  Objectives 1 & 2 | Time Allotted:  10 minutes | Materials Needed:  Colored construction paper  chalk | Targeted Learning Style(s):  Visual  Kinesthetic | Bloom’s Levels Used:  Applying  Understanding  Remembering |
| Explanation/Notes:  Participants will split into groups of 2 to compete in a relay using two-dimensional arrays.  Each team will line up next to 3 pieces of colored paper on the floor, one person beside each of the first two pieces. Next, the person in the lead will run to the board, write their “index,” then write the alphabet backwards and return to their “array,” but moving forward by one element. Following this, the next team-member will repeat the above process.  The first team to have both members exit the array wins! | | | | | |

Main Session Activity 2

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| Activity Name:  Coding Activity:  Matrix Calculator | Session Objective(s) Met:  Objectives 1, 2, & 3 | Time Allotted:  20 minutes | Materials Needed:  Computer with a Java compiler  Or pencil and paper | Targeted Learning Style(s):  Audial  Visual  Kinesthetic | Bloom’s Levels Used:  Creating  Evaluating  Analyzing  Applying  Understanding  Remembering |
| Explanation/Notes:  Participants will split into groups of 2-3 to write a simple matrix calculator for 3x3 matrices. The calculator should perform the following:   1. Create a scanner object to read in integers 2. Declare two multidimensional arrays of size 3 by 3 3. Using a series of looping statements, populate the first array with user input 4. Populate the second array with user input 5. Print out a visual depiction of the arrays with each element separated by a tab 6. Add and subtract each element position-wise in each array 7. Using a final series of looping statements, output a visual depiction of the addition of both matrices, followed by a visual depiction of the subtraction of both matrices | | | | | |

Closing Activity

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| Activity Name:  Summarize the Procedure/Steps | Session Objective(s) Met:  Objectives 1 & 2 | Time Allotted:  5 minutes | Materials Needed:  None | Targeted Learning Style(s):  Audial | Bloom’s Levels Used:  Analyzing  Applying  Evaluating  Remembering |
| Explanation/Notes:  Participants will be asked to describe the procedures required to create and fill an array. Additional questions will be asked on when a multidimensional array may be required, and whether there are solutions to these situations that avoid multidimensional array use (The time complexity of a multidimensional array is O(n2), meaning they are not very efficient from a time complexity standpoint). | | | | | |

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| Plan for extra activity:  Predict the Next Lecture Topic:  The class is now reaching a point where their code will turn into a giant wall of text. This leads them into the next topic of methods and classes, which allows them to compartmentalize their code, making it modular and more manageable in the process.  This makes for an excellent segue into how they might handle the increasing complexity of their code.  As such, participants will be asked to describe how they can make their code simpler to understand and modify, giving them some foreshadowing of the next few weeks. | Extra notes: |