*2022-2023*

**OSU Supplemental Instruction Session Planning Form**

SI Leader: \_\_\_\_\_\_Thomas Morton\_\_\_\_\_\_\_ Week of Semester:\_\_\_\_\_\_\_\_\_13\_\_\_\_\_\_\_\_\_\_

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

Session Objectives

1. Students will understand the differences between pass-by-value & pass-by-reference

2. Students will analyze complex situations and observe how methods can decrease coding by providing reusability

3. Students will apply the concepts of methods to write a simple calculator that is capable of multiplication, addition, subtraction, division, modulo, and exponentiation.

Professor Meeting Notes:

Opening/Introductory Activity

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| Activity Name:  Pass by Value – A Physical Example | Session Objective(s) Met:  Objective 1 | Time Allotted:  5 minutes | Materials Needed:  A few pieces of paper  Something to write with | Targeted Learning Style(s):  Visual  Kinesthetic | Bloom’s Levels Used:  Analyzing  Applying  Understanding  Remembering |
| Explanation/Notes:  Each participant will be asked to take a piece of paper and write their name, birthday, and favorite hobby on it. Meanwhile, a piece of paper will be passed around the room by the SI Leader, and each participant will write the same information on the paper.  Afterwards, each participant will be asked to read their paper and then rip it up afterward. Following that, the SI leader will discuss how the paper the students ripped represents pass-by-value and that any modifications to the values on this paper are lost when the paper is destroyed.  However, the paper that was passed around the room represents a pass-by-reference. Though the students destroyed their copy, the reference paper retains its values.  Questions will be answered afterward to clarify the concept since it is typically difficult to understand (and becomes more complicated when pass by pointer becomes introduced in C/C++). | | | | | |

Main Session Activity 1

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| Activity Name:  Method Grouping | Session Objective(s) Met:  Objectives 1 & 2 | Time Allotted:  15 minutes | Materials Needed:  Whiteboard & Marker | Targeted Learning Style(s):  Audial  Visual  Kinesthetic | Bloom’s Levels Used:  Evaluating  Analyzing  Applying  Understanding  Remembering |
| Explanation/Notes:  Given a series of processes (categories), participants will be asked to select one method (action) and write it below the process.  Categories will include: [driving a car, walking, driving a boat, writing on paper, writing on a tablet, opening a jar, opening a bottle of pop, moving a box to a shelf, removing a book from a shelf, opening a door, sitting in a chair at a table]  Actions include: [push(), pull(), twist(), grip(), lift(), release(),moveLeft(), moveRight(), moveForward(), moveReverse(), stop(), sitDown()]  Participants will be asked to think of any other actions that a process may require and if any other processes can use that action. In doing so, participants will gain an understanding of how methods can be reused for different tasks which reduces code complexity and time spent writing code. | | | | | |

Main Session Activity 2

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| Activity Name:  Calculator Revisited  (Now with 100% more methods!) | Session Objective(s) Met:  Objectives 1, 2, & 3 | Time Allotted:  25 minutes | Materials Needed:  Computer with Java compiler suggested but not required | Targeted Learning Style(s):  Audial  Visual  Kinesthetic | Bloom’s Levels Used:  Creating  Evaluating  Analyzing |
| Explanation/Notes:  Working as a group, participants will conceptualize how to write a calculator using methods to perform a series of operations. The objectives to meet are as follows:   1. Frame the class and main method, importing only a scanner (no math functions) 2. Write variables for the first input, second input, result, and math operation and exit condition 3. Set up a while loop to prompt input until the user inputs Q for the exit condition 4. Prompt the user for the first input 5. Prompt the user for the math operation 6. Prompt the user for the second input 7. Write method stubs for each operation 8. Write a statement to call the appropriate method for the given math operation 9. Complete the method stubs for each math operation, returning the result to the result variable in main. 10. Display the result of the math operation 11. Prompt the user to continue; exit if the input is ‘Q’ 12. Clear all variables and return to start of loop | | | | | |

Closing Activity

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| Activity Name:  K W L | Session Objective(s) Met:  Objectives 1, 2, & 3 | Time Allotted:  5 minutes | Materials Needed:  None | Targeted Learning Style(s):  Audial | Bloom’s Levels Used:  Understanding  Remembering |
| Explanation/Notes:  Participants will be asked to describe something they know, want to know, or have learned about the topics discussed in session today. Questions will be redirected to other participants to reinforce understanding. If a question cannot be answered by another participant, the SI Leader will answer the question. | | | | | |

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| Plan for extra activity:  Predict Test Questions:  Participants will be asked to consider how the concept of methods will be covered in an exam.  Many CS courses offer coding exams on paper or without a compiler, so this will provide a great opportunity to consider how their knowledge of the topic will be assessed. | Extra notes: |