MIDTERM EXAM INSTRUCTIONS

1. Midterm Exam: **25 points w/ 0 E.C. points**
2. Due Date & Time: **##-##-20## at ##:## AM**

WHAT TO SUBMIT
1. Midterm Exam Report, 1 PDF
   Example: DucTa-Exam-Midterm-Report.pdf

HOW TO SUBMIT AND THE RULES TO FOLLOW
- The Guidelines for All Assignments
- The Course Policy on Student Conduct and Academic Honesty
- The assignment instructions and rubric for this assignment
- The additional instructions are provided in class and on Canvas.
- Submit via Canvas, the Assignment Submission section.

PERFORMANCE TRACKER		
ASMT	**GRADE**	**YOUR GRADE**
ADVISING	25	
CANVAS	15	
01	25	
02	30	
03-PREPARATION	25	
03	50	
04	50	
05	40	
MIDTERM EXAM	25	
TOTAL	285	

A: 90-100% **B**: 80-89% **C**: 70-79% **D**: 60-69% **F**: 0-60%
The course grader provides feedback on your assignments on Canvas.

ABOUT

The goal of this take-home exam is for us to **know what we do not know**.

We are taking this exam as seriously as we take an actual exam in class. Please,
1. Follow all the rules and guidelines listed at the top of page 1 and page 2
2. Read each question carefully before answering

We will go over the answers to all the exam questions together in class.

STEP A – Take the Exam, **10 points**

1. Allocate 50 quiet minutes to take the exam from page 2 to the last page.
2. Record the date and time when you start.
3. Stop right at minute 50. Record the date and time when you stop the exam.

STEP B – Correct Your Answers, **10 points**

1. Review the related course materials and write code when necessary to find a correct answer for each question. We should be able to find all the answers using the packages, the in-class discussions, our assignments, and the other course materials. **Confirm you have done this step B.1 carefully**.

EXAM, General Layout

Full Name | SFSU ID

- Exam, Start, Date and Time:
- Exam, Stop, Date and Time:
- Exam Score for the Original Answers:

- Each question
    - Step A: Answer
    - Step B: Correct Step A's answer
    - Step C: More practice
    - Other notes

- Next question

2. At the end of each of your original answers, type in *italic* text and
   - Give your original answer a score.
   - List all the mistakes then explain why, you think, you made the mistakes. Add the correct answer you found. Document how you found the correct answer. Document where you found the materials that support the answer.
   - If you did not make any mistakes, please document how you verified that your answer was accurate. Document how you found the correct answer. Document where you found the materials that support the answer.
   - Outline how you could have done better.
   - **Show all your work in detail**. Use the provided Microsoft Word exam file/template. Space was provided for answers.

STEP C – Reflect and Retake the Exam, **5 points**

1. **Problem-Solving**: Reflect if you managed the exam time efficiently and if you strategized your test-taking successfully.
2. Repeat steps A to C again if necessary. Please keep appending new content as directed in Step B.2.
3. Think, if the same topics will be tested again in our final exam and your job interviews, what questions we may get.

It is a good idea to do every step of this exam thoroughly. We are creating a set of materials that we will use to review for the final exam. And this is also the best way to prepare ourselves to succeed in the second half of the semester. Thank you.

1. Section. Date and Time
   Section 01. Due ##-##-#### at ##:## ##

2. Midterm Exam (1 exam, 0 dropped): 50 Points

Full Name in CAPITAL LETTERS | SFSU ID

| MIGUEL ANTONIO LOGARTA | 923062683 |

3. To prepare for this exam, please review all the related materials including the packages, slides, mock exam, reading assignments, in-class practices, sample programs posted in the File Manager, and assignments.

4. Do not print this exam. No papers. No handwriting. No scanned images. No screenshots. Please type up all your answers in the answer space available in the exam. The provided exam will be in Microsoft Word format. Please submit a single PDF via Canvas. Again, use the provided exam file, not the assignment template. This is an exam, not an assignment.All the rules of an actual exam apply to this exam such as closed books, closed notes, closed IDEs, and no communication with anyone except the course instructor. The course instructor will be available via email during the exam time.

5. Again, you cannot use any other materials or tools but only the provided exam which will be in Microsoft Word format.

6. Please ask all your questions, if any, during the review sessions. Thank you.

HONOR CODE:

- Please strictly follow:

- The Course Policy on Student Conduct and Academic Honesty
- The instructions which are given in class, on Canvas, and during the exam

- Exam, **Start** at Date and Time: ##-##-20## at ##:## #M
- Exam, **Stop** at Date and Time: ##-##-20## at ##:## #M
- Exam **Total Score** for the Original Answers: ## / 100

* The final score for this take-home exam is the sum of the points gathered from Step A, Step B, and Step C (Page 1). *The points offered to each question (such as Part A.1 – 5 pts) are only references and are to help us prepare for the final exam.*

PART A – 40 Points

A.1 - 8 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

How is a **programmer** different from a **coder**?

A coder just types code and doesn't think about all the other aspects about the program.
The programmer thinks about the clients' needs, requests, and wants. They think about the structure of the program and its scalability well before they even start coding their first lines.

A.2 - 8 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Write a complete method declaration and name each component.

Answer:

Public static void exampleMethod(int arg1, string arg2)

"public" is the access-modifier which tells the program whether the method can be accessed outside the class or not. Access-modifier can have values public, private, and protected.

"static" refers to the type of method. If a method is static, then that means you don't have to instantiate this class to access this method. Non-static is the opposite.

"void" refers to the return type of the method. It is the data type that the method returns. Sometimes it would return an integer, while other times it would return a String or boolean. Void means that this method "doesn't return" anything.

"exampleMethod" is the method's name

"int arg1, int arg2" are the method's parameters. Here there are 2 parameters of type int. This means that the method takes in two numbers.

Correct answer:
I forgot to put to the method body, the structure of the method goes like this. I also learned what the "static" part is called.

```
<access_modifier> <non_access_modifier> <return_type> method_name(<parameter_list>) {
    <method_body>
}
```

Access modifiers modify the visibility of a class, method, or variable. For example a private method makes the method inaccessible to code outside of the scope of the class. Some examples include keywords public, private, and protected.

Non-access modifiers on the other hand, declare the "behavior" of a class, method, or variable. For example the "static" keyword tells java to initialize this method only once. It makes the method accessible even without instantiating the class. Some example keywords include static, abstract, and volatile.

A.3 - 8 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Please write code to declare and initialize a 1D array then write a do-while loop to display the content of the array.

Answer:
```
Int[] exampleArray = { 1, 2, 3, 4, 5 };
int counter = 0;

do {
    system.out.println(exampleArray[counter++]);
} while (counter < exampleArray.length)
```

Correct Answer:
Previous code causes a crash if the array size is 0.

```
Int[] exampleArray = { 1, 2, 3, 4, 5 };
int counter = 0;

if (exampleArray.length != 0) {
    do {
        system.out.println(exampleArray[counter++]);
    } while (counter < exampleArray.length);
}
```

A.4 - 8 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Please write code to declare and initialize a 2D array then write a while loop to display the content of the array.

Answer:
```
Int[][] twoDimArray = {{ 1, 2, 3 }, { 4, 5, 6}, { 7, 8, 9}};
for (int I = 0; I < twoDimArray.length; i++) {
    for (int j = 0; j < twoDimArray[i].length) {
        system.out.println(twoDimArray[i][j]);
    }
}
```

Correct answer:
I didn't read the question properly. It asked for a while loop, not a for loop.

```
Int[][] twoDimArray = {{ 1, 2, 3 }, { 4, 5, 6}, { 7, 8, 9}};
int I = 0;
while (I < twoDimArray.length) {
    int j = 0;
    while (j < twoDimArray[i].length) {
        system.out.println(twoDimArray[i][j]);
        j++;
    }
    i++;
}
```

A.5 - 8 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Please list and explain the general components of a Java class.

The general components of a java class includes the declaration of the class, its constructor, its class members, and its class methods. For example,

```java
class MyClass {
    private int myMember;
    public String myPublicMember;

    MyClass(int a, String b) {
        this.myMember = a;
        this.myPublicMember = b;
    }

    public static void printHello() {
        system.out.println("Hello");
    }

    public int addMe(int a) {
        return this.myMember + a;
    }
}
```

We declare a class called MyClass. It has public and private members myMember and myPublicMember. These are not static meaning that each instance of MyClass holds their own values for myMember and myPublicMember. We also have our constructor MyClass() which is called when you instantiate the class. It instantiates our members. We also have our methods printHello() and addMe(). We can call these members to run the code inside of them.

PART B – 60 Points

B.1 - 10 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Please code a complete do-while loop with a meaningful body then convert it into a while loop and a for loop.

do-while loop

```
bool correctAnswer = false;
int theValue = 3;

do {
    int answer = 0;
    Scanner sc = new Scanner(system.in);
    system.out.print("Pick a number between 1 and 5");
    answer = sc.nextInt();
    if (answer == theValue) {
        correctAnswer = true;
    }
} while (correctAnswer == false);
```

while loop

for loop

B.2 - 10 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Please code a complete if-else statement then convert it into a switch statement. The switch statement must have at least 4 cases (including the default case).

if-else statement

switch statement

B.3 - 10 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Please code a complete Java program: HolidayStudio
- Your program prompts users to enter their favorite language choice.
- Then the program prints "**Joyful Summer!**" in that language.
- It is OK to assume that users will enter a valid language as their favorite language.
- This program must have at least 2 methods. (1 of them is the main method.)
- A sample run of the program (think Google Translate):

```
Enter your favorite language: Vietnamese
Mùa hè Vui vẻ!
```

Note: "Vietnamese" is one valid language choice. You can choose a different language for your code (and sample run).

B.4 TO B.6 QUESTIONS ARE LINKED TO EACH OTHER

B.4 - 10 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Please choose a real-life entity then write a Java class to represent it.

What is that entity?

Why do you think it is suitable to be a Java class?

Please code the class. Your class should have data fields, constructors, and methods.

B.5 - 10 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Please write code to add another data field to your class to keep track of the number of objects created.

Please explain in detail how the data field should be used. Provide code to demonstrate and support your explanation.

Then explain in detail why your code should work properly. Provide code to demonstrate and support your explanation.

B.6 - 10 Points – *Your answer must be in your own words, be in complete sentences, and provide very specific details to earn credit.*

Write a no-argument constructor and a three-argument constructor for your class.

Code instructions to create 2 objects using both constructors above.

PLEASE DO NOT DETACH THIS PAGE FROM YOUR EXAM.
You may get partial credit for what you write on this page.