420-202-RE DATA STRUCTURES AND OO PROGRAMMING
Mid term
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Read the Instructions carefully before continuing the Exam:

- Take the initiative to understand the tasks independently. If you encounter any doubts, try to resolve them on your own. Avoid asking the teacher about every single question.

- Open only one project "Mid Term" and create one file for every task. After finishing each task, copy the code and screenshot of the output to a word file. Once you complete the code, submit the word file and project folder with source code on the assignment link.

Important Notice:

As this midterm is a deciding factor for course success, it is strictly prohibited to directly copy code from ChatGPT or similar AI tools. Do not use the mobile during the exam as Internet is not allowed. Invigilance tool will be activated to watch your screen activities. Failure to do so violates college policies and the teacher is not responsible for any further consequences.

************************* *Best of Luck***************************

Q1) Write a Java program that reads a text file, searches for a given word, and deletes all other words from the file, using Java IO

Sample Input: “The quick brown fox jumps over the lazy dog”

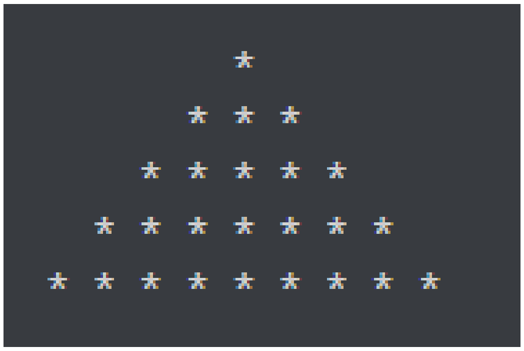
Given word: fox

Output: fox

Q2) Write a Java program that takes two arrays as parameters and returns the combined array without any duplicate values.

Input: Array 1: [1, 2, 3, 4, 5] Array 2: [4, 5, 6, 7, 8]
Output: Combined Array without duplicates: [1, 2, 3, 4, 5, 6, 7, 8]

Q3) Write a java program to print the full pyramid using * (maintain the space)



```
        *
      * * *
    * * * * *
  * * * * * * *
* * * * * * * * *
```

Q4) Write a Java program to get a number from the user and task is to replace every digit by its next incremented value

Sample

Input 8740   Output 9851,
Input: 102891   Output 213902

Q5) Write a Java program to get a value from the user and check whether every digit of a positive integer is odd. You should print true if the number consists entirely of odd digits and false if any of its digits are even.

Sample Input - 135319 output true
Input: 9145293 output False

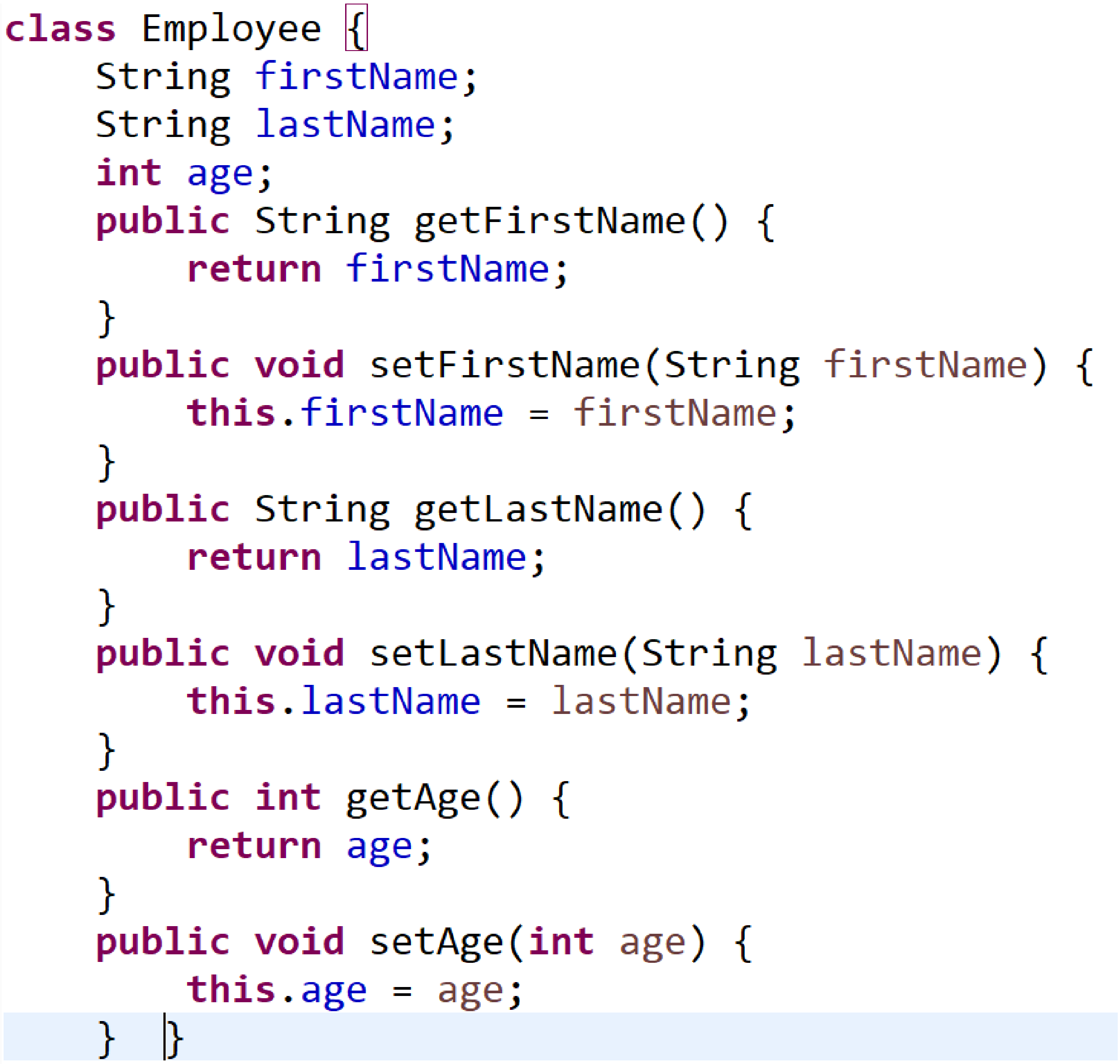
Q6) Create a Java program to develop a class called "Day" which represents days of the week. This class should encapsulate the functionality related to handling days of the week, such as storing the day's name (e.g., "Sun" for Sunday). The program should facilitate several operations on an instance of the "Day" class:

1. Allow setting the day.
2. Enable printing the current day.
3. Retrieve the current day.
4. Retrieve the next day.
5. Retrieve the previous day.
6. Calculate and retrieve the day after adding a specific number of days to the current day. For instance, if the current day is Monday and four days are added, the resulting day should be Friday. Similarly, if today is Tuesday and 13 days are added, the resulting day should be Monday.

Ensure appropriate constructors are provided to initialize the "Day" objects. Implement the necessary methods to fulfill the functionalities outlined above (1 to 6). Moreover, provide robustness to the code by including exception handling for all the necessary methods to guide the user if the input is not relevant.

Q7) Given a Java employee class with appropriate getters and setters, instantiate 10 employee objects and store them in a List. Then, address the following inquiries using comparable and comparator interface:

- Identify employees aged between 30 and 40 inclusively, and print their last names.
- Determine the count of employees older than 40.
- Find the maximum and minimum ages among the employees.
- Find the employee with the first name "Sakku" (if you store it) and display his last name.
- Sort all employees based on their last names and display their first names.



```java
class Employee {
    String firstName;
    String lastName;
    int age;
    public String getFirstName() {
        return firstName;
    }
    public void setFirstName(String firstName) {
        this.firstName = firstName;
    }
    public String getLastName() {
        return lastName;
    }
    public void setLastName(String lastName) {
        this.lastName = lastName;
    }
    public int getAge() {
        return age;
    }
    public void setAge(int age) {
        this.age = age;
    }  }
```