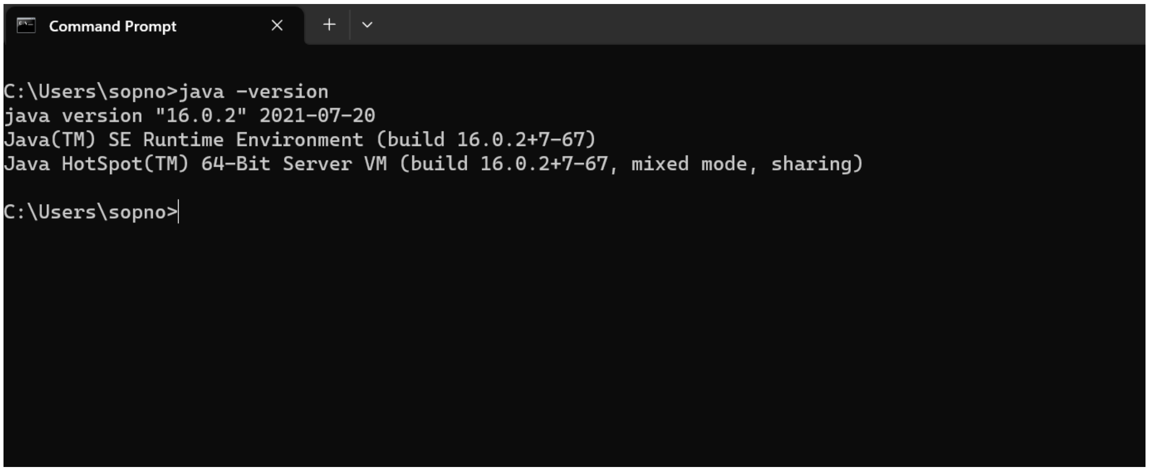
Setting-up Java Software Development Tools and Environment for CS425-SWE-202306

Submitted by : **Md Shafiqul Islam (614199)**

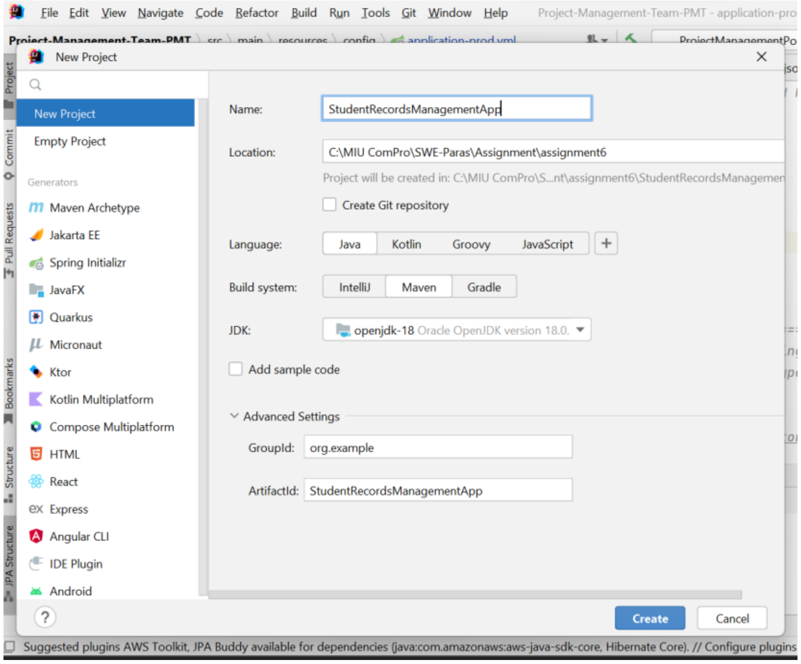
1. Java SE Development Kit (JDK):
   1.1. I had installed Java16 previously
   1.2. Screenshots of my Windows:



```
C:\Users\sopno>java -version
java version "16.0.2" 2021-07-20
Java(TM) SE Runtime Environment (build 16.0.2+7-67)
Java HotSpot(TM) 64-Bit Server VM (build 16.0.2+7-67, mixed mode, sharing)

C:\Users\sopno>
```

2. IDE tool:

2.1. Jetbrains IntelliJ IDEA is installed & I am using it for years.



New Project

Name: StudentRecordsManagementApp

Location: C:\MIU ComPro\SWE-Paras\Assignment\assignment6

Project will be created in: C:\MIU ComPro\S...nt\assignment6\StudentRecordsManagemen

□ Create Git repository

Language: Java | Kotlin | Groovy | JavaScript

Build system: IntelliJ | Maven | Gradle

JDK: openjdk-18 Oracle OpenJDK version 18.0.

□ Add sample code

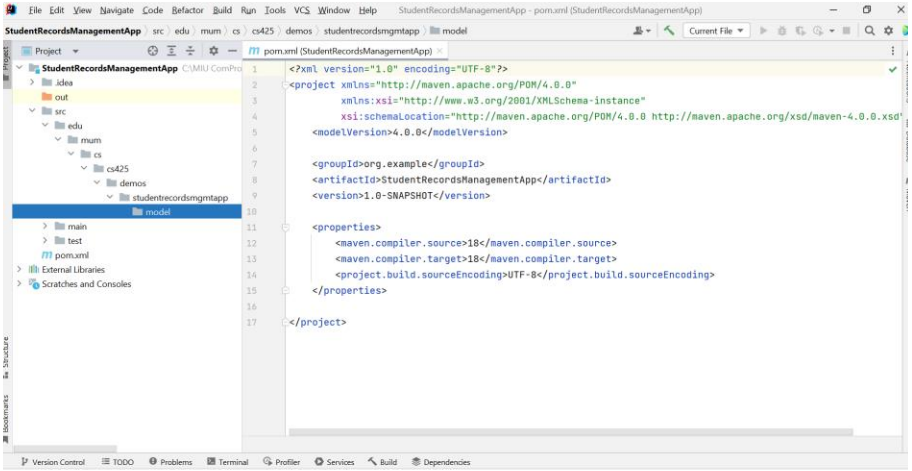
Advanced Settings

GroupId: org.example

ArtifactId: StudentRecordsManagementApp

Suggested plugins AWS Toolkit, JPA Buddy available for dependencies (java:com.amazonaws:aws-java-sdk-core, Hibernate Core). // Configure plugins

3. Using your IDE, implement code solutions for the following:



StudentRecordsManagementApp - pom.xml (StudentRecordsManagementApp)

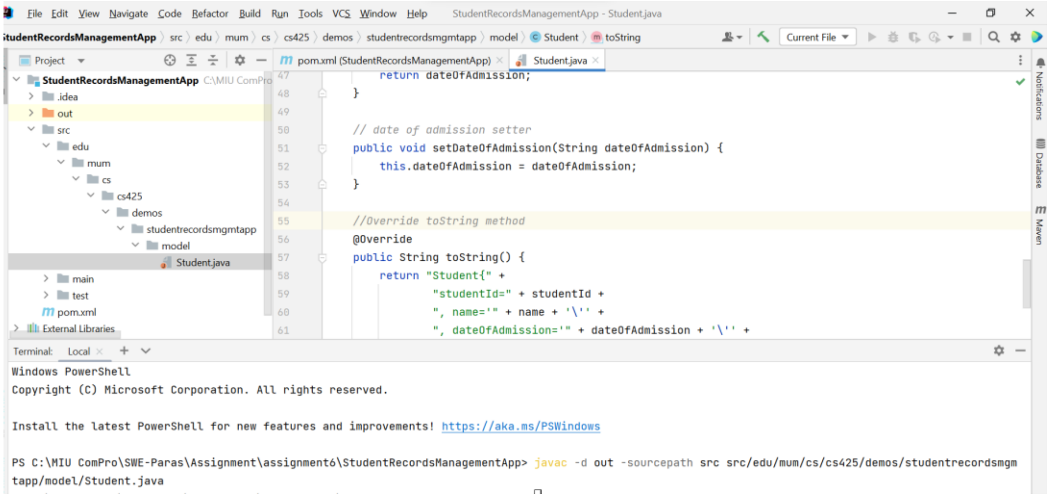
StudentRecordsManagementApp 〉 src 〉 edu 〉 mum 〉 cs 〉 cs425 〉 demos 〉 studentrecordsmgmtapp 〉 model

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd"
    <modelVersion>4.0.0</modelVersion>

    <groupId>org.example</groupId>
    <artifactId>StudentRecordsManagementApp</artifactId>
    <version>1.0-SNAPSHOT</version>

    <properties>
        <maven.compiler.source>18</maven.compiler.source>
        <maven.compiler.target>18</maven.compiler.target>
        <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    </properties>

</project>
```

Create a Command-Line Java Application and write code for the Student class, including the following:

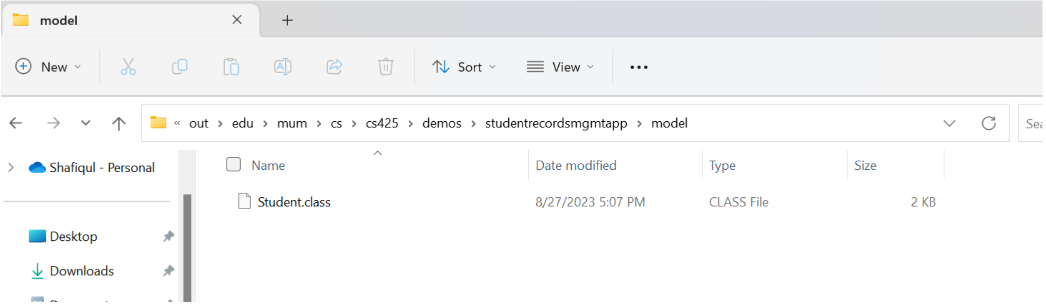
- Each of the data fields,
- Any 3 constructors including the default constructor, and
- Getter (accessor) and Setter (mutator) methods for the data fields.

3.1. - Make the class be inside a package named, edu.mum.cs.cs425.demos.studentrecordsmgmtapp.model


File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
StudentRecordsManagementApp - Student.java
StudentRecordsManagementApp 〉 src 〉 edu 〉 mum 〉 cs 〉 cs425 〉 demos 〉 studentrecordsmgmtapp 〉 model 〉 Student 〉 toString
Current File
Project
pom.xml (StudentRecordsManagementApp)
Student.java
StudentRecordsManagementApp C:\MIU ComPro
.idea
out
src
edu
mum
cs
cs425
demos
studentrecordsmgmtapp
model
Student.java
main
test
pom.xml
External Libraries
Notifications
Database
Maven
Terminal: Local

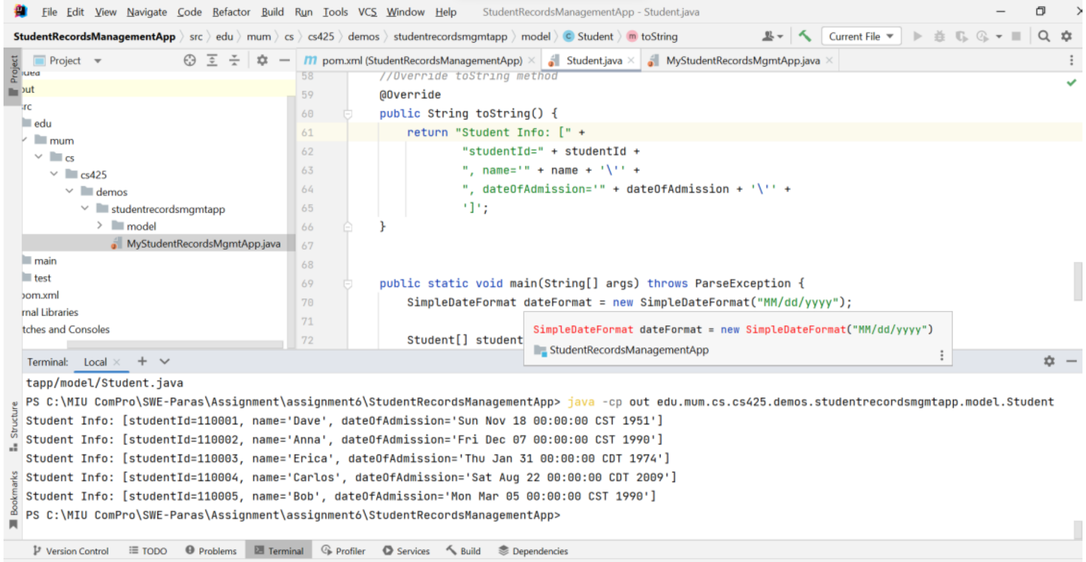
```java
        return dateOfAdmission;
    }

    // date of admission setter
    public void setDateOfAdmission(String dateOfAdmission) {
        this.dateOfAdmission = dateOfAdmission;
    }

    //Override toString method
    @Override
    public String toString() {
        return "Student{" +
                "studentId=" + studentId +
                ", name='" + name + '\'' +
                ", dateOfAdmission='" + dateOfAdmission + '\'' +
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\MIU ComPro\SWE-Paras\Assignment\assignment6\StudentRecordsManagementApp> javac -d out -sourcepath src src/edu/mum/cs/cs425/demos/studentrecordsmgm
tapp/model/Student.java
```


model
New
Sort
View
« out › edu › mum › cs › cs425 › demos › studentrecordsmgmtapp › model
Sea
Shafiqul - Personal
Desktop
Downloads

```
Name              Date modified          Type          Size
Student.class     8/27/2023 5:07 PM      CLASS File    2 KB
```

3.2. In the package named, edu.mum.cs.cs425.demos.studentrecordsmgmtapp, add an executable Java class named, MyStudentRecordsMgmtApp. In the class's main method, write code that creates an array of Students, using the sample data provided above.

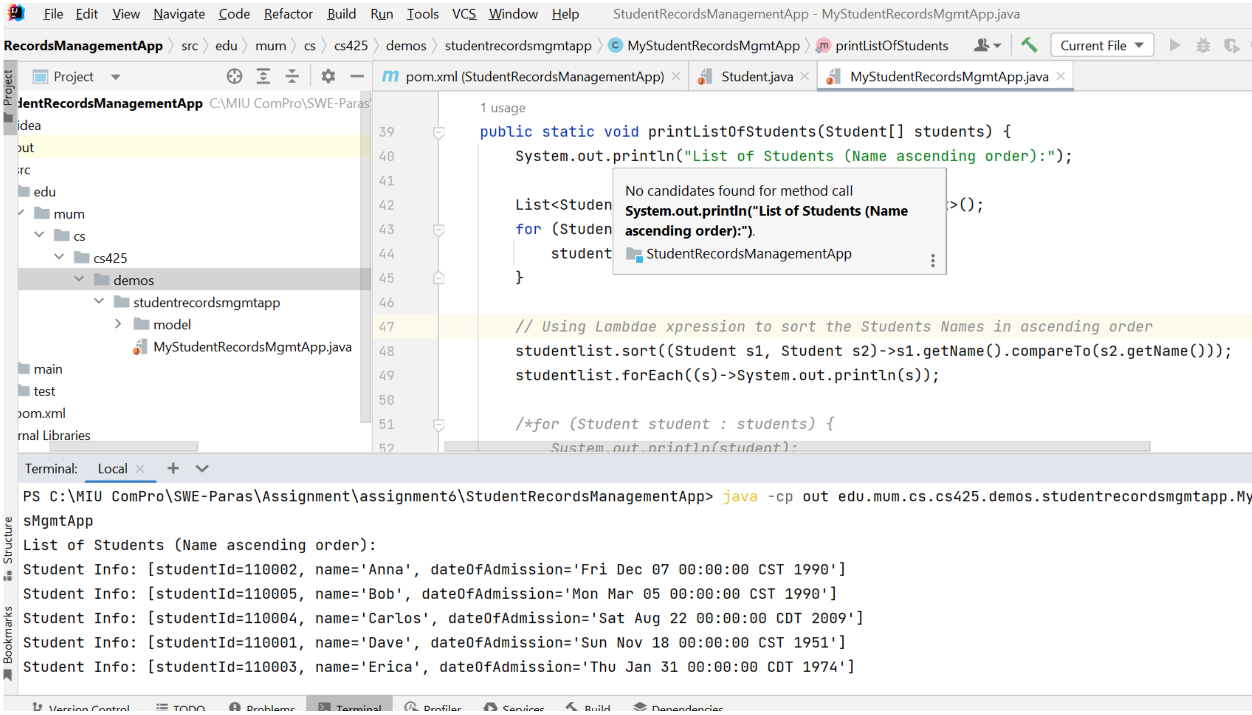

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
StudentRecordsManagementApp - Student.java
StudentRecordsManagementApp 〉 src 〉 edu 〉 mum 〉 cs 〉 cs425 〉 demos 〉 studentrecordsmgmtapp 〉 model 〉 Student 〉 toString
Current File
Project
pom.xml (StudentRecordsManagementApp)
Student.java
MyStudentRecordsMgmtApp.java
out
edu
mum
cs
cs425
demos
studentrecordsmgmtapp
model
MyStudentRecordsMgmtApp.java
main
test
pom.xml
rnal Libraries
tches and Consoles
StudentRecordsManagementApp
Terminal: Local
Structure
Bookmarks
Version Control
TODO
Problems
Terminal
Profiler
Services
Build
Dependencies

```java
    //Override toString method
    @Override
    public String toString() {
        return "Student Info: [" +
                "studentId=" + studentId +
                ", name='" + name + '\'' +
                ", dateOfAdmission='" + dateOfAdmission + '\'' +
                ']';
    }


    public static void main(String[] args) throws ParseException {
        SimpleDateFormat dateFormat = new SimpleDateFormat("MM/dd/yyyy");

        Student[] student
```

```java
SimpleDateFormat dateFormat = new SimpleDateFormat("MM/dd/yyyy")
```

```
tapp/model/Student.java
PS C:\MIU ComPro\SWE-Paras\Assignment\assignment6\StudentRecordsManagementApp> java -cp out edu.mum.cs.cs425.demos.studentrecordsmgmtapp.model.Student
Student Info: [studentId=110001, name='Dave', dateOfAdmission='Sun Nov 18 00:00:00 CST 1951']
Student Info: [studentId=110002, name='Anna', dateOfAdmission='Fri Dec 07 00:00:00 CST 1990']
Student Info: [studentId=110003, name='Erica', dateOfAdmission='Thu Jan 31 00:00:00 CDT 1974']
Student Info: [studentId=110004, name='Carlos', dateOfAdmission='Sat Aug 22 00:00:00 CDT 2009']
Student Info: [studentId=110005, name='Bob', dateOfAdmission='Mon Mar 05 00:00:00 CST 1990']
PS C:\MIU ComPro\SWE-Paras\Assignment\assignment6\StudentRecordsManagementApp>
```

3.3. In the MyStudentRecordsMgmtApp class, also add a method named, printListOfStudents, which takes as input, the array of students and it iterates through the objects and prints out all the students data to the console/screen. This print-out should be in ascending order of the Students Names. **Note**: Call your printListOfStudents(...) method within your MyStudentRecordsMgmtApp class's main method, then execute it.

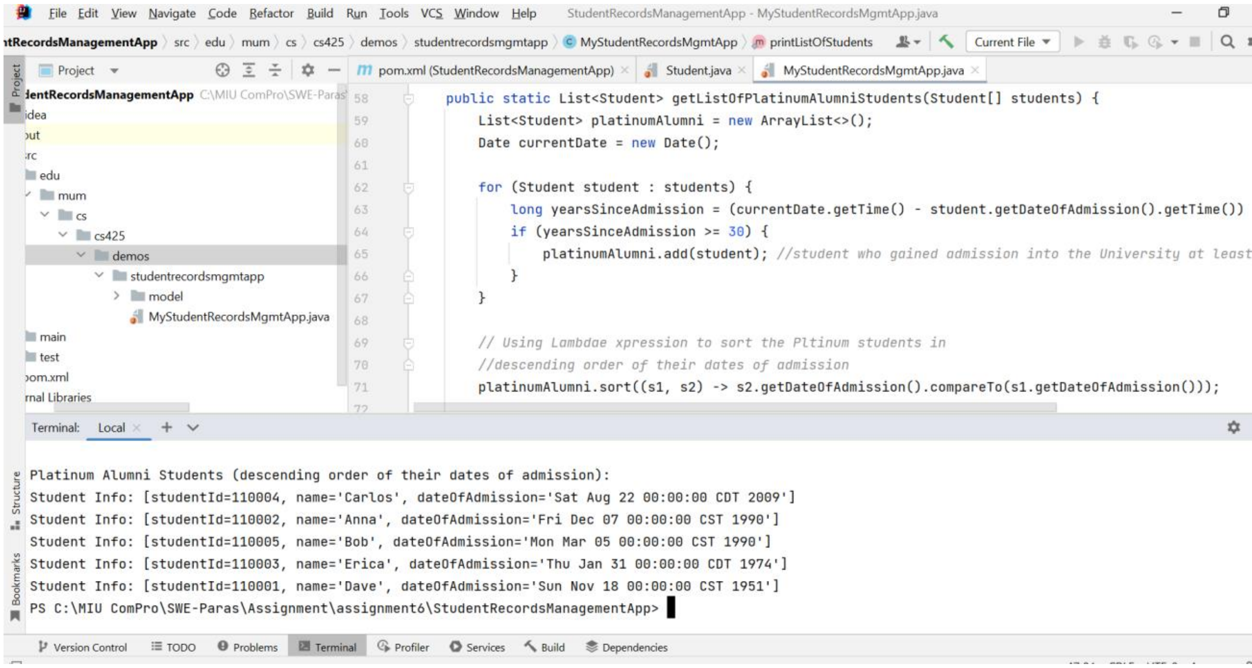

File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
StudentRecordsManagementApp - MyStudentRecordsMgmtApp.java
RecordsManagementApp 〉 src 〉 edu 〉 mum 〉 cs 〉 cs425 〉 demos 〉 studentrecordsmgmtapp 〉 MyStudentRecordsMgmtApp 〉 printListOfStudents
Current File
Project
pom.xml (StudentRecordsManagementApp)
Student.java
MyStudentRecordsMgmtApp.java
dentRecordsManagementApp C:\MIU ComPro\SWE-Paras\
idea
out
rc
edu
mum
cs
cs425
demos
studentrecordsmgmtapp
model
MyStudentRecordsMgmtApp.java
main
test
pom.xml
rnal Libraries
Terminal: Local
Version Control
TODO
Problems
Terminal
Profiler
Services
Build
Dependencies
Project
Structure
Bookmarks

```
1 usage
public static void printListOfStudents(Student[] students) {
    System.out.println("List of Students (Name ascending order):");

    List<Studen                                            >();
    for (Studen
        student
    }

    // Using Lambdae xpression to sort the Students Names in ascending order
    studentlist.sort((Student s1, Student s2)->s1.getName().compareTo(s2.getName()));
    studentlist.forEach((s)->System.out.println(s));

    /*for (Student student : students) {
        System.out.println(student);
```

No candidates found for method call **System.out.println("List of Students (Name ascending order):")**.
StudentRecordsManagementApp

```
PS C:\MIU ComPro\SWE-Paras\Assignment\assignment6\StudentRecordsManagementApp> java -cp out edu.mum.cs.cs425.demos.studentrecordsmgmtapp.My
sMgmtApp
List of Students (Name ascending order):
Student Info: [studentId=110002, name='Anna', dateOfAdmission='Fri Dec 07 00:00:00 CST 1990']
Student Info: [studentId=110005, name='Bob', dateOfAdmission='Mon Mar 05 00:00:00 CST 1990']
Student Info: [studentId=110004, name='Carlos', dateOfAdmission='Sat Aug 22 00:00:00 CDT 2009']
Student Info: [studentId=110001, name='Dave', dateOfAdmission='Sun Nov 18 00:00:00 CST 1951']
Student Info: [studentId=110003, name='Erica', dateOfAdmission='Thu Jan 31 00:00:00 CDT 1974']
```

3.4. Also, in the MyStudentRecordsMgmtApp class, add another method named, getListOfPlatinumAlumniStudents, which takes as input, the array of all students and it returns a List of only PlatinumAlumni students. A PlatinumAlumni student is a student who gained admission into the University at least 30 years ago. **Note**: Call your getListOfPlatinumAlumniStudents(...) method within your MyStudentRecordsMgmtApp class's main method, print the list of the platinumalumni students, in descending order of their dates of admission, then execute it.



File Edit View Navigate Code Refactor Build Run Tools VCS Window Help
StudentRecordsManagementApp - MyStudentRecordsMgmtApp.java
ntRecordsManagementApp 〉 src 〉 edu 〉 mum 〉 cs 〉 cs425 〉 demos 〉 studentrecordsmgmtapp 〉 MyStudentRecordsMgmtApp 〉 printListOfStudents
Current File
Project
pom.xml (StudentRecordsManagementApp)
Student.java
MyStudentRecordsMgmtApp.java
dentRecordsManagementApp C:\MIU ComPro\SWE-Paras
idea
out
rc
edu
mum
cs
cs425
demos
studentrecordsmgmtapp
model
MyStudentRecordsMgmtApp.java
main
test
pom.xml
rnal Libraries
Terminal: Local
Structure
Bookmarks
Version Control
TODO
Problems
Terminal
Profiler
Services
Build
Dependencies

```
    public static List<Student> getListOfPlatinumAlumniStudents(Student[] students) {
        List<Student> platinumAlumni = new ArrayList<>();
        Date currentDate = new Date();

        for (Student student : students) {
            long yearsSinceAdmission = (currentDate.getTime() - student.getDateOfAdmission().getTime())
            if (yearsSinceAdmission >= 30) {
                platinumAlumni.add(student); //student who gained admission into the University at least
            }
        }

        // Using Lambdae xpression to sort the Pltinum students in
        //descending order of their dates of admission
        platinumAlumni.sort((s1, s2) -> s2.getDateOfAdmission().compareTo(s1.getDateOfAdmission()));
```

```
Platinum Alumni Students (descending order of their dates of admission):
Student Info: [studentId=110004, name='Carlos', dateOfAdmission='Sat Aug 22 00:00:00 CDT 2009']
Student Info: [studentId=110002, name='Anna', dateOfAdmission='Fri Dec 07 00:00:00 CST 1990']
Student Info: [studentId=110005, name='Bob', dateOfAdmission='Mon Mar 05 00:00:00 CST 1990']
Student Info: [studentId=110003, name='Erica', dateOfAdmission='Thu Jan 31 00:00:00 CDT 1974']
Student Info: [studentId=110001, name='Dave', dateOfAdmission='Sun Nov 18 00:00:00 CST 1951']
PS C:\MIU ComPro\SWE-Paras\Assignment\assignment6\StudentRecordsManagementApp>
```

3.5. Further CodingPractice Exercise Problems:

3.5.1. Write a function (or method) named, printHelloWorld, that takes as input, an array of integers and iterates through them, and it prints the text, "Hello", if the integer is a multiple of 5. It prints the text, "World", if the integer is a multiple of 7. And when it encounters an integer that is a multiple of both 5 and 7, it prints the text, "HelloWorld".

3.5.2. Write code for a method named, findSecondBiggest, which takes as input, an array of integers and finds and returns the second biggest of the integers. For example, findSecondBiggest([1,2,3,4,5]) should return 4. And findSecondBiggest([19,9,11,0,12]) should return 12. (**Note**: Do not use sorting).

3.6. Take a screenshot of each of your results as shown within your IDE (or in a command/terminal window) and include it in your submission.

All screenshots attached in all steps above.

4. Create a git repository:

https://github.com/shafiqsust/SEWDE

5. Done