Course Class

```
package com.saiful.BonusAssignment;

/*
 *  Name: Md. Saiful Islam
 *  ID: 1922071
 *  Course: CSE215.16
 *  Instructor Name: Shaikh Shawon Arefin Shimon
 *  @date 3 Jan 2021
 */
public class Course {
  private String name;
  private String code;

  public Course() {

  }

  public Course(String name, String code) {
    this.name = name;
    this.code = code;
  }

  public String getName() {
    return name;
  }

  public void setName(String name) {
    this.name = name;
  }

  public String getCode() {
```

```
    return code;
  }

  public void setCode(String code) {
    this.code = code;
  }

  public String toString() {
    return "Name: " + name + ", Code: " + code + ".";
  }
```

Person Class

```
package com.saiful.BonusAssignment;

/*
 *  Name: Md. Saiful Islam
 *  ID: 1922071
 *  Course: CSE215.16
 *  Instructor Name: Shaikh Shawon Arefin Shimon
 *  @date 3 Jan 2021
 */
public class Person {
  private String name;
  private int age;
  private String nationalId;
  private String address;

  public Person() {
  }
```

```
  public Person(String name, int age, String
nationalId, String address) {
    this.name = name;
    this.age = age;
    this.nationalId = nationalId;
    this.address = address;

  }

  public String getName() {
    return name;
  }

  public void setName(String name) {
    this.name = name;
  }

  public int getAge() {
    return age;
  }

  public void setAge(int age) {
    this.age = age;
  }

  public String getNationalId() {
    return nationalId;
  }

  public void setNationalId(String nationalId) {
    this.nationalId = nationalId;
  }

  public String getAddress() {
```

```
    return address;
  }

  public void setAddress(String address) {
    this.address = address;
  }

  public String toString() {
    return "Name: " + name + "\nAge: " + age +
"\nNational ID: " + nationalId + "\nAddress: " +
address;
  }

}
```

Student Class

```
package com.saiful.BonusAssignment;

import java.util.Arrays;

/*
 *  Name: Md. Saiful Islam
 *  ID: 1922071
 *  Course: CSE215.16
 *  Instructor Name: Shaikh Shawon Arefin Shimon
 *  @date 3 Jan 2021
 */
public class Student extends Person {

  private final int MAX_COURSE = 5;
```

```
  private String id;
  private double cgpa;
  private Course[] course;
  private int numberOfCourse = 0;

  public Student() {

  }

  public Student(String name, int age, String
nationalId, String address, double cgpa, String id) {
    super(name, age, nationalId, address);
    this.cgpa = cgpa;
    this.id = id;

  }

  public String getId() {
    return id;
  }

  public void setId(String id) {
    this.id = id;
  }

  public double getCgpa() {
    return cgpa;
  }

  public void setCgpa(double cgpa) {
    this.cgpa = cgpa;
  }

  public Course[] getCourse() {
```

```
    return course;
  }

  public void setCourse(Course[] course) {
    this.course = course;
  }

  public int getNumberOfCourse() {
    return numberOfCourse = course.length;
  }

  public void setNumberOfCourse() {
    this.numberOfCourse = course.length;

  }

  public void addCourse(Course[] newCourse) {
    if (newCourse.length <= MAX_COURSE) {
      this.course = newCourse;
    } else {
      System.out.println("you can not take anymore
courses!");
    }
  }

  public void printCourses() {
    System.out.println(Arrays.deepToString(course));

  }

  @Override
  public String toString() {
```

```
    return "Name: " + super.getName() + "\nAge: " +
super.getAge() + "\nNational Id: " +
super.getNationalId()
        + "\nAddress: " + getAddress() + "\ncgpa: " +
getCgpa() + "\nCourses: " + Arrays.toString(course) +
"\nid: "
        + id + "\nnumberOfCourses: " +
getNumberOfCourse();
  }

}
```

Faculty Class

```
package com.saiful.BonusAssignment;

import java.util.Arrays;

/*
 *  Name: Md. Saiful Islam
 *  ID: 1922071
 *  Course: CSE215.16
 *  Instructor Name: Shaikh Shawon Arefin Shimon
 *  @date 3 Jan 2021
 */
public class Faculty extends Person {

  private final int MAX_COURSE = 5;
  private Course[] course;
  private int numberOfCourses = 0;
```

```
  private String initial;

  public Faculty() {

  }

  public Faculty(String name, int age, String
nationalId, String address, Course[] course, String
initial) {
    super(name, age, nationalId, address);
    this.course = course;
    this.initial = initial;
  }

  public Course[] getCourse() {
    return course;
  }

  public void setCourse(Course[] course) {
    this.course = course;
  }

  public int getNumberOfCourse() {
    return numberOfCourses = course.length;
  }

  public void setNumberOfCourse() {
    this.numberOfCourses = course.length;
  }

  public String getInitial() {
    return initial;
  }
```

```
  public void setInitial(String initial) {
    this.initial = initial;
  }

  public void addCourse(Course[] newCourse) {
    if (newCourse.length <= MAX_COURSE) {
      this.course = newCourse;
    } else {
      System.out.println("you can not take anymore
courses!");
    }
  }

  public void printCourses() {

    System.out.println(Arrays.deepToString(course));

  }

  public String toString() {
    return "Name: " + super.getName() + "\nAge: " +
super.getAge() + "\nNational ID: " +
super.getNationalId()
        + "\nAddress: " + getAddress() + "\nCourse
Name: " + Arrays.deepToString(course) + "\nNumber of
courses: "
        + getNumberOfCourse() + "\nInitial: " +
initial;
  }

}
```

Permanent Faculty Class

```
package com.saiful.BonusAssignment;

import java.util.Arrays;

/*
 *  Name: Md. Saiful Islam
 *  ID: 1922071
 *  Course: CSE215.16
 *  Instructor Name: Shaikh Shawon Arefin Shimon
 *  @date 3 Jan 2021
 */
public class PermanentFaculty extends Faculty {
  private final double BASIC_SALARY = 4000.00;

  public PermanentFaculty(String name, int age,
String nationalId, String address, Course[] course,
      int numberOfCourse) {
    super(name, age, nationalId, address, course,
"");
    getSalary();
  }

  public double getSalary() {
    double newSalary = 0.0;
    for (int i = 0; i < super.getNumberOfCourse();
i++) {
      newSalary = newSalary + BASIC_SALARY * 5 / 100;
    }
    return newSalary + BASIC_SALARY;
  }
```

```
  public String toString() {
    return "Name: " + super.getName() + "\nAge: " +
super.getAge() + "\nNational Id: " +
super.getNationalId()
        + "\nAddress: " + getAddress() + "\nCourses:
" + Arrays.deepToString(super.getCourse())
        + "\nNumber of Courses: " +
super.getNumberOfCourse() + "\nSalary: " +
getSalary();
  }
}
```

Visiting Faculty Class

```
package com.saiful.BonusAssignment;

import java.util.Arrays;

/*
 *  Name: Md. Saiful Islam
 *  ID: 1922071
 *  Course: CSE215.16
 *  Instructor Name: Shaikh Shawon Arefin Shimon
 *  @date 3 Jan 2021
 */
public class VisitingFaculty extends Faculty {

  private final double BASIC_SALARY = 3000;
```

```
  public VisitingFaculty(String name, int age, String
nationalId, String address, Course[] course, int
numberOfCourse) {
    super(name, age, nationalId, address, course,
"");
    getSalary();
  }

  public double getSalary() {
    double newSalary = 0.0;
    for (int i = 0; i < super.getNumberOfCourse();
i++) {
      newSalary = newSalary + BASIC_SALARY * 5 / 100;
    }
    return newSalary + BASIC_SALARY;
  }

  public String toString() {
    return "Name: " + super.getName() + "\nAge: " +
super.getAge() + "\nNational Id: " +
super.getNationalId()
        + "\nAddress: " + getAddress() + "\nCourses:
" + Arrays.deepToString(super.getCourse())
        + "\nNumber of Courses: " +
super.getNumberOfCourse() + "\nSalary: " +
getSalary();
  }
}
```

Driver Class

```
package com.saiful.BonusAssignment;

/*
 *  Name: Md. Saiful Islam
 *  ID: 1922071
 *  Course: CSE215.16
 *  Instructor Name: Shaikh Shawon Arefin Shimon
 *  @date 3 Jan 2021
 */
public class Driver {

  public static void main(String[] args) {

    System.out.println("Task 1");
    System.out.println("permanentFaculty");
    System.out.println("=================\n");

    PermanentFaculty p1 = new PermanentFaculty("Dave
Mustaine", 35, "2312312", "Dhanmondi, Dhaka", new
Course[] {}, 0);
    System.out.println(p1);

    System.out.println();

    System.out.println("Task 2");
    System.out.println("visitingFaculty");
    System.out.println("=================\n");

    VisitingFaculty v1 = new VisitingFaculty("Cliff
Burton", 37, "2311233", "Uttara, Dhaka", new Course[]
{}, 0);
    System.out.println(v1);
```

```
    System.out.println();

    System.out.println("Task 3");
    System.out.println("Add Three Courses To P1
(Permanent Faculty)");

System.out.println("================================
==========\n");

    Course c1 = new Course("Programming Language II",
"CSE 215");
    Course c2 = new Course("Data Structures and
Algorithm", "CSE 225");
    Course c3 = new Course("Digital Logic design",
"CSE 231");
    Course c4 = new Course("Intermediate
Composition", "ENG 103");
    Course c5 = new Course("Introduction to
Composition", "ENG 102");
    Course c6 = new Course("Public Speaking", "ENG
111");
    Course c7 = new Course("Calculus I", "MAT 120");
    Course c8 = new Course("Calculus II", "MAT 130");
    Course c9 = new Course("Calculus III", "MAT
250");

    p1.addCourse(new Course[] { c1, c2, c3 });
    System.out.println(p1.toString());

    System.out.println();

    System.out.println("Task 3 repeat");
    System.out.println("Add Two Courses To V1
(Visiting Faculty)");
```

```
System.out.println("================================
=======\n");

    v1.addCourse(new Course[] { c4, c5, c6 });
    System.out.println(v1.toString());

    System.out.println();

    System.out.println("Task 4");
    System.out.println("=======\n");
    System.out.println("Add Five Courses To S1
(Student)");

System.out.println("================================"
);

    Student s1 = new Student("Kerry King", 19,
"123123", "Gulshan, Dhaka", 3.87, "2012764642");
    s1.addCourse(new Course[] { c1, c2, c3, c4, c5
});
    System.out.println(s1.toString());

    System.out.println();

    System.out.println("Task 5");
    System.out.println("=======\n");

    PermanentFaculty p2 = new PermanentFaculty("Binoy
Mondol", 43, "1245987654", "Mirpur, Dhaka", new
Course[] {}, 0);
    p2.addCourse(new Course[] { c4 });
```

```
    VisitingFaculty v2 = new VisitingFaculty("Shamim
Alom", 40, "4887554715", "Pallabi, Dhaka", new
Course[] {}, 0);
    v2.addCourse(new Course[] { c4, c6 });
    Student s2 = new Student("Sayem Sajil", 22,
"4875445215", "Bashundhara, Dhaka", 3.50,
"1922054854");
    s2.addCourse(new Course[] { c1, c2, c5 });

    Person arr[] = new Person[6];
    arr[0] = p1;
    arr[1] = p2;
    arr[2] = v1;
    arr[3] = v2;
    arr[4] = s1;
    arr[5] = s2;

    for (int i = 0; i < arr.length; i++) {
      System.out.print(arr[i]);
      System.out.println("\n");
    }

    System.out.println();

    System.out.println("Task 6");
    System.out.println("=======\n");

    s1.addCourse(new Course[] { c1, c2, c3, c4, c5,
c6 });
    p1.addCourse(new Course[] { c1, c2, c3, c7, c8,
c9 });

  }
```

```
}
```