Nation University
มหาวิทยาลัยเนชั่น

โครงงานกลางภาค

รายวิชา การเขียนโปรแกรมภาษาจาวา รหัสวิชา CPSC 462

จัดทำโดย

นางสาวกวินทรา ยะป๊อก

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สาขาวิทยาการคอมพิวเตอร์

เสนอ

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ภาคการศึกษาที่ 1/2563

คำนำ

โครงงานเล่มนี้เป็นส่วนหนึ่งของรายวิชาการเขียนโปรแกรมภาษาจาวา รหัสวิชา CPSC 462 โดยมีจุดประสงค์เพื่อศึกษาเกี่ยวกับ 49 keywords (60 คำศัพท์),จุดผิดพลาดของโปรแกรม,ศึกษาเกี่ยวกับ Class Diagram,Array การรับค่าจากแป้นพิมพ์ทั้ง String และ char พร้อมทั้งแสดงผล และ substring / % max min avg total เพื่อเป็นแนวทางในการศึกษาและเสริมทักษะความรู้ให้กับตนเองและผู้อ่านโครงงานฉบับนี้

ข้อพเจ้าหวังว่าโครงงานฉบับนี้จะทำให้ทุกท่านได้รับประโยชน์ไม่มากก็น้อยหากผิดพลาดประการใดข้าพเจ้าขออภัยมา ณ ที่นี้ด้วย

ท้ายนี้ ขอขอบคุณ ผศ.บุรินทร์ รุจจนพันธุ์ ผู้ให้ความรู้และแนวทางในการศึกษาเพื่อพัฒนาวินัยในการทำงานต่อไป

นางสาวกวินทรา ยะป๊อก

ผู้จัดทำ

สารบัญ

1. 49 keywords (60 คำศัพท์)

SUBJECT : NO : DATE : /

คำสงวน (Reserved Word or Java keywords)

1. abstract	boolean	break	byte	case	catch
2. char	class	const	continue	default	do
3. double	else	extends	final	finally	float
4. for	goto	if	implements	import	instanceof
5. int	interface	long	native	new	package
6. private	protected	public	return	short	static
7. Strictfp	super	switch	synchronized	this	throw
8. throws	transient	try	void	volatile	while
9. assert	enum	bit	server	upload	software
10. login	keyword	folder	file	browser	auto

2. โปรแกรมถูก 10 โปรแกรม

1. Array

```
public class TwoDimensionArray {
   public static void main(String[] args) {
      final int ROW = 3, COLUMN = 4;
      int score[][] = new int[ROW][COLUMN];
      int data = 5;
      // Assigning values
      for (int i = 0; i < ROW; i++) {
         for (int j = 0; j < COLUMN; j++) {
            score[i][j] = data;
            data += 5;
         }
      }
      // Printing array
      System.out.println("Array");
      for (int i = 0; i < ROW; i++) {

         for (int j = 0; j < COLUMN; j++) {
            System.out.print("\t" + score[i][j]);
         }
         System.out.println();
      }
      // Printing array's transpose
      System.out.println("Transpose array");
      for (int i = 0; i < COLUMN; i++) {
```

```
            for (int j = 0; j < ROW; j++) {
                System.out.print("\t" + score[j][i]);
            }
            System.out.println();
        }
        // Find a summation and an average
        int sum = 0;
        for (int i = 0; i < COLUMN; i++) {
            for (int j = 0; j < ROW; j++) {
                sum += score[j][i];
            }
        }
        System.out.println("Array's sum = " + sum);
        System.out.println("Array's avg = " + (float)(sum) / (ROW * COLUMN));
    }
}
```

2. While

```
import java.util.Scanner;
public class ClassAverage {
        public static void main(String[] args) {
                Scanner input = new Scanner(System.in);
                System.out.println("Welcome to the grade book for");
                System.out.println("Java Programming!");

                int total;
                int gradeCounter;
                int grade;
```

```
            int average;
            total = 0;
            gradeCounter = 1;
            while (gradeCounter <= 10) {
                System.out.print("Enter grade: ");
                grade = input.nextInt();
                total = total + grade;
                gradeCounter = gradeCounter + 1;
            }
            average = total / 10;
            System.out.printf("\nTotal of all 10 grades is %d\n", total);
            System.out.printf("Class average is %d\n", average);
        }
}
```

3. try catch

```
import java.util.InputMismatchException;
import java.util.Scanner;
public class TestException1 {
   public static void main (String[] args) {
      Scanner reader = new Scanner(System.in);
      int index;
      int[] array = { 10, 20, 30, 40, 50 };
      try {
         System.out.print("Enter index: ");
         index = reader.nextInt();
         try {
            System.out.println("array[" + index + "] = " + array[index]);
```

```
        } catch (IndexOutOfBoundsException ex) {
            System.out.println("Exception occured: " + ex);
            System.out.println("You entered number exceeds the array size");
        }
      } catch (InputMismatchException ex) {
        System.out.println("Exception occurred: " + ex);
        System.out.println("You must specify an index in integer");
      }
   }
}
```

4. Switch

```
import java.util.Scanner;
public class Switch {
   public static void main(String[] args) {
      Scanner reader = new Scanner(System.in);
      System.out.print("What\'s floor do you want to go: ");
      char floor = reader.next().charAt(0);
      switch (floor) {
         case 'G' :
            System.out.println("Elevator is going to ground floor.");
            break;
         case '1' :
            System.out.println("Elevator is going to first floor.");
            break;
```

```
            case '2' :
               System.out.println("Elevator is going to second floor.");
               break;
            case '3' :
               System.out.println("Elevator is going to third floor.");
               break;
            default:
               System.out.println("Elevator don't know where to go.");
         }
      }
}
```

5. String

```
import java.util.Scanner;
public class Constant {
   public static void main(String[] args) {
      String name;
      int age;
      String sport;
      Scanner reader = new Scanner(System.in);
      Scanner reader2 = new Scanner(System.in);
      System.out.print("What's your name?: ");
      name = reader.nextLine();
```

```
        System.out.print("How old are you?: ");
        age = reader2.nextInt();
        System.out.print("What's your favorite sport?: ");
        sport = reader.nextLine();
        System.out.println("Hello " + name);
        System.out.print("You was born in " + (2017 - age));
        System.out.println(" and loves to play " + sport);
    }
}
```

6. Method

```
import java.util.Scanner;
public class MethodParameters {
    public static void main(String[] args) {
        Scanner reader = new Scanner(System.in);
        // call method
        open ();
        System.out.print("Enter music name to play: ");
        play(reader.nextLine()); // call method with 1 argument
        System.out.println("Where do you want to seek music to?");
        int min, sec;
        System.out.print("Enter minute: ");
        min = reader.nextInt();
```

```
        System.out.print("Enter second: ");
        sec = reader.nextInt();
        seekTo(sec, min); // call method with 2 arguments
    }
    // no parameter method
    public static void open () {
        System.out.println("Music player started.");
    }
    // method with one parameter
    public static void play (String name) {
        System.out.println("Playing your music \" " + name + "\"");
    }
    // method with two parameters
    public static void seekTo (int sec, int min) {
        System.out.println("Seek music to " + min + ":" + sec);
    }
}
```

7. Else-If

```
import java.util.Scanner;
public class ElseIf {
    public static void main(String[] args) {
        Scanner sn = new Scanner(System.in);
```

```
    System.out.println("\tScore Evaluation Program");
    System.out.print("Enter your score between 0 - 100: ");

    int score = sn.nextInt();
    if (score < 0 || score > 100) {
        System.out.println("You must enter a correct score, try again later.");
    } else {
        if (score >= 80) {
            System.out.println("Your score is excellent.");
            System.out.println("You grant grade S.");
        } else if (score >= 60) {
            System.out.println("Your score is good.");
            System.out.println("You grant grade A.");
        } else if (score >= 40) {
            System.out.println("Your score is fair.");
            System.out.println("You grant grade B.");
        } else {
            System.out.println("Your score is poor.");
            System.out.println("You grant grade C.");
        }
    }
}
```

```
}
```

8. Access Modifiers

```
public class TestFruit {
   public static void main (String[] args) {
      Fruit fr = new Fruit();
      fr.name = "Grape";
      fr.flavor = "sour";
      fr.setColor("green");
      System.out.println("Fruit name: " + fr.name);
      System.out.println("Flavor: " + fr.flavor);
      System.out.println("Color: " + fr.getColor());
   }
}
class Fruit {
   public String name;
   String flavor;
   private String color;
   public String getColor () {
      return color;
   }
   public void setColor (String c) {
      color = c;
```

```
    }
}
```

9. Finally

```
import java.io.BufferedReader;
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileReader;
import java.io.IOException;
public class TestFileException {
    public static void main(String[] args) {
        File file = new File("file.txt");
        BufferedReader reader = null;
        try {
            reader = new BufferedReader(new FileReader(file));
            String text = null;
            while ((text = reader.readLine()) != null) {
                System.out.println(text);
            }
        } catch (FileNotFoundException e) {
            e.printStackTrace();
        } catch (IOException e) {
            e.printStackTrace();
```

```
        } finally {
            try {
                if (reader != null) {
                    reader.close();
                }
            } catch (IOException e) {
            }
        }
    }
}
```

10. Inheritance

```
class Artist extends Person {
    String genre;
    public Artist (String name, int age) {
        this.name = name;
        this.age = age;
    }
    public void playMusic () {
        System.out.println(name + " is playing " + genre + " music.");
    }
}
class Athlete extends Person {
```

```
    String sport;
    public Athlete (String name, int age) {
        this.name = name;
        this.age = age;
    }
    public void playSport () {
        System.out.println(name + " is playing " + sport + ".");
    }
}
```

2.1 โปรแกรมผิด 10 โปรแกรม

1. Array

```
public Class TwoDimensionArray {
   public static void main(String[] args) {
      final int ROW = 3, COLUMN = 4
      int score[][] = new int[ROW][COLUMN];
      int data = 5;
      // Assigning values
      for (int i = 0; i < ROW; i++) {
         for (int j = 0; j < COLUMN; j++)
            score[i][j] = data;
            data = 5;
         }
      }
      // Printing array
      System.out.println("Array");
      for (int i = 0; i < ROW; i++) {

         for (int j = 0; j < COLUMN; j++) {
            System.out.print("\t" + score[i][j]);
         }
         System.out.println;
      }
      // Printing array's transpose
      System.out.println("Transpose array");
```

```
 for (int i = 0; i < COLUMN; i++) {
          for (int j = 0; j < ROW; j++) {
             System.out.print("\t" + score[j][i]);
          }
          System.out.println();
       }
       // Find a summation and an average
       int sum = 0;
       for (int i = 0; i < COLUMN; i++) {
          for (int j = 0; j < ROW; j++) {
             sum += score[j][i];
          }
       }
       System.out.println("Array's sum = " + sum);
       System.out.println("Array's avg = " + (float)(sum) / (ROW * COLUMN));
    }
}
```

2. While

```
import java.util.Scanner;
public Class ClassAverage {
            public static void main(string[] args) {
                        Scanner input = new Scanner(System.in);
                        System.out.println("Welcome to the grade book for");
                        System.out.println("Java Programming!");

                        int total;
                        int gradeCounter
```

```
                int grade;
                int average;
                total = 0;
                gradeCounter = 1;
                while (gradeCounter <= 10)
                        System.out.print("Enter grade: ");
                        grade = input.nextInt;
                        total = total + grade;
                        gradeCounter = gradeCounter + 1;
                }
                average = total / 10;
                System.out.printf("\nTotal of all 10 grades is %d\n", total);
                System.out.printf("Class average is %d\n", average);
        }
}
```

3. try catch

```
import java.util.InputMismatchException;
import java.util.Scanner;
public Class TestException1 {
   public static void main (string[] args) {
      Scanner reader = new Scanner(System.in);
      int index;
      int[] array = { 10, 20, 30, 40, 50 };
      try {
         System.out.print("Enter index: ");
         index = reader.nextInt;
         try {
```

```
            System.out.println("array[" + index + "] = " + array[index]);
        } catch (IndexOutOfBoundsException ex) {
            System.out.println("Exception occured: " + ex);
            System.out.println("You entered number exceeds the array size");
        }
    } catch (InputMismatchException ex)
        System.out.println("Exception occurred: " + ex);
        System.out.println("You must specify an index in integer")
    }
  }
}
```

4. Switch

```
import java.util.Scanner;
public class Switch {
   public static void main(string[] args) {
      Scanner reader = new Scanner(System.in);
      System.out.print("What\'s floor do you want to go: ");
      char floor = reader.next().charAt(0);
      switch (floor) {
         case 'G' :
            system.out.println("Elevator is going to ground floor.");
            break;
         case '1'
            System.out.println("Elevator is going to first floor.");
```

```
            break;
        case '2' :
            System.out.println("Elevator is going to second floor.");
            break;
        case '3' :
            System.out.println("Elevator is going to third floor.");
            break;
        default:
            System.out.println("Elevator don't know where to go.")

    }
}
```

5. String

```
import java.util.Scanner;
public Class Constant {
    public static void main(string[] args) {
        String name;
        int age;
        String sport;
        Scanner reader = new Scanner(System.in);
        Scanner reader2 = new Scanner(System.in)
        System.out.print("What's your name?: ");
```

```
        name = reader.nextLine();
        System.out.print("How old are you?: ");
        age = reader2.nextInt();
        System.out.print("What's your favorite sport?: ");
        sport = reader.nextLine;
        System.out.println("Hello " + name);
        System.out.print("You was born in " + (2017 - age));
        System.out.println(" and loves to play " + sport);

}
```

6. Method

```
import java.util.Scanner;
public class MethodParameters {
   public static void main(String[] args)
        Scanner reader = new Scanner(System.in);
        // call method
        open ();
        System.out.print("Enter music name to play: ");
        play(reader.nextLine()); // call method with 1 argument
        System.out.println("Where do you want to seek music to?");
        int min sec;
        System.out.print("Enter minute: ");
```

```
        min = reader.nextInt();
        system.out.print("Enter second: ");
        sec = reader.nextInt();
        seekTo(sec, min); // call method with 2 arguments
    }
    // no parameter method
    public static void open () {
        System.out.println("Music player started.")
    }
    // method with one parameter
    public static void play (String name) {
        System.out.println("Playing your music \" " + name + "\"");
    }
    // method with two parameters
    public static void seekTo (int sec, int min)
        System.out.println("Seek music to " + min + ":" + sec);
    }
}
```

7. Else-If

```
import java.util.Scanner;
public class ElseIf
    public static void main(String[] args) {
```

```
Scanner sn = new Scanner(System.in);
System.out.println("\tScore Evaluation Program");
System.out.print("Enter your score between 0 - 100: ");

int score = sn.nextInt()
if (score < 0 || score > 100) {
   System.out.println("You must enter a correct score, try again later.");
} else {
   if (score >= 80) {
      system.out.println("Your score is excellent.");
      System.out.println("You grant grade S.");
   } else if (score >= 60) {
      System.out.println("Your score is good.");
      System.out.println("You grant grade A.");
    else if (score >= 40) {
      System.out.println("Your score is fair.");
      System.out.println("You grant grade B.");
   } else {
      System.out.println("Your score is poor.");
      System.out.println("You grant grade C.");

}
```

```
    }
}
```

8. Access Modifiers

```
public Class TestFruit {
    public static void main (String[] args) {
        Fruit fr = new Fruit();
        fr.name = "Grape";
        fr.flavor = "sour"
        fr.setColor("green");
        System.out.println("Fruit name: " + fr.name);
        System.out.println("Flavor: " + fr.flavor);
        System.out.println("Color: " + fr.getColor(); //());
    }
}
Class Fruit {
    public String name;
    String flavor;
    private String color;
    public String getColor () {
        return color;
    }
    public void setColor (String c) {
```

```
      color = c
   }
}
```

9. Finally

```
import java.io.BufferedReader;
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileReader
import java.io.IOException;
public class TestFileException {
   public static void main(String[] args) {
      File file = new File("file.txt");
      BufferedReader reader = null;
      try
         reader = new BufferedReader(new FileReader(file));
         String text = null;
         while ((text = reader.readLine()) != null) {
            system.out.println(text);
         }
      } catch (FileNotFoundException e) {
         e.printStackTrace();
      } catch (IOException e) {
```

```
            e.printStackTrace();
        } finally {
            try {
                if (reader != null) {
                    Reader.close();
                }
            } catch (IOException e) {


        }
    }
}
```

10. Inheritance

```
Class Artist extends Person {
    string genre;
    public Artist (String name, int age) {
        this.name = name;
        this.age = age;
    }
    public void playMusic ()
        System.out.println(name + " is playing " + genre + " music.");
    }
}
```

```
class Athlete extends Person
    String sport;
    public Athlete (String name, int age) {
        this name = name;
        this.age = age;
    }
    public void playSport () {
        System.out.println(name + " is playing " + sport + ".");
    }
}
```

2.2 เฉลยจุดผิดโปรแกรม

1. Array

```
public Class TwoDimensionArray { //class ต้องเป็นตัวพิมพ์เล็กทั้งหมด
   public static void main(String[] args) {
      final int ROW = 3, COLUMN = 4 //ต้องใส่เครื่องหมาย ;
      int score[][] = new int[ROW][COLUMN];
      int data = 5;
      // Assigning values
      for (int i = 0; i < ROW; i++) {
         for (int j = 0; j < COLUMN; j++) //ต้องใส่เครื่องหมาย {
            score[i][j] = data;
            data = 5; //ต้องใส่เครื่องหมาย + ไว้ข้างหน้า =
         }
      }
      // Printing array
      System.out.println("Array");
      for (int i = 0; i < ROW; i++) {

         for (int j = 0; j < COLUMN; j++) {
            System.out.print("\t" + score[i][j]);
         }
         System.out.println; //ต้องใส่เครื่องหมาย () หน้า ;
      }
      // Printing array's transpose
      System.out.println("Transpose array");
```

```
        for (int i = 0; i < COLUMN; i++) {
            for (int j = 0; j < ROW; j++) {
                System.out.print("\t" + score[j][i]);
            }
            System.out.println();
        }
        // Find a summation and an average
        int sum = 0;
        for (int i = 0; i < COLUMN; i++) {
            for (int j = 0; j < ROW; j++) {
                sum += score[j][i];
            }
        }
        System.out.println("Array's sum = " + sum);
        System.out.println("Array's avg = " + (float)(sum) / (ROW * COLUMN));
    }
}
```

2. While

```
import java.util.Scanner;
public Class ClassAverage { //class ต้องเป็นตัวพิมพ์เล็กทั้งหมด
        public static void main(string[] args) { //String
                Scanner input = new Scanner(System.in);
                System.out.println("Welcome to the grade book for");
                System.out.println("Java Programming!");

                int total;
```

```
int gradeCounter //ต้องใส่เครื่องหมาย ;
                    int grade;
                    int average;
                    total = 0;
                    gradeCounter = 1;
                    while (gradeCounter <= 10) //ต้องใส่เครื่องหมาย {
                            System.out.print("Enter grade: ");
                            grade = input.nextInt; //ต้องใส่เครื่องหมาย () หน้า ;
                            total = total + grade;
                            gradeCounter = gradeCounter + 1;
                    }
                    average = total / 10;
                    System.out.printf("\nTotal of all 10 grades is %d\n", total);
                    System.out.printf("Class average is %d\n", average);
          }
}
```

3. try catch

```
import java.util.InputMismatchException;
import java.util.Scanner;
public Class TestException1 { //class ต้องเป็นตัวพิมพ์เล็กทั้งหมด
   public static void main (string[] args) { //String
      Scanner reader = new Scanner(System.in);
      int index;
      int[] array = { 10, 20, 30, 40, 50 };
```

```
    try {
      System.out.print("Enter index: ");
      index = reader.nextInt; //ต้องใส่เครื่องหมาย () หน้า ;
      try {
        System.out.println("array[" + index + "] = " + array[index]);
      } catch (IndexOutOfBoundsException ex) {
        System.out.println("Exception occured: " + ex);
        System.out.println("You entered number exceeds the array size");
      }
    } catch (InputMismatchException ex) //ต้องใส่เครื่องหมาย {
      System.out.println("Exception occurred: " + ex);
      System.out.println("You must specify an index in integer") //ต้องใส่เครื่องหมาย ;
    }
  }
}
```

4. Switch

```
import java.util.Scanner;
public class Switch {
  public static void main(string[] args) { //String
    Scanner reader = new Scanner(System.in);
    System.out.print("What\'s floor do you want to go: ");
    char floor = reader.next().charAt(0);
    switch (floor) {
      case 'G' :
```

```
            system.out.println("Elevator is going to ground floor."); //System
break;
        case '1' //ต้องใส่เครื่องหมาย :
            System.out.println("Elevator is going to first floor.");
            break;
        case '2' :
            System.out.println("Elevator is going to second floor.");
            break;
        case '3' :
            System.out.println("Elevator is going to third floor.");
            break;
        default:
            System.out.println("Elevator don't know where to go.") //ต้องใส่เครื่องหมาย ;
     //ต้องใส่เครื่องหมาย }
   }
}
```

5. String

```
import java.util.Scanner;
public Class Constant { //class
   public static void main(string[] args) { //String
      String name;
```

```
        int age;
        String sport;
        Scanner reader = new Scanner(System.in);
        Scanner reader2 = new Scanner(System.in) //ต้องใส่เครื่องหมาย ;
        System.out.print("What's your name?: ");
        name = reader.nextLine();
        System.out.print("How old are you?: ");
        age = reader2.nextInt();
        System.out.print("What's your favorite sport?: ");
        sport = reader.nextLine; //ต้องใส่เครื่องหมาย () หน้า ;
        System.out.println("Hello " + name);
        System.out.print("You was born in " + (2017 - age));
        System.out.println(" and loves to play " + sport);
    //ต้องใส่เครื่องหมาย }
}
```

6. Method

```
import java.util.Scanner;
public class MethodParameters {
    public static void main(String[] args) //ต้องใส่เครื่องหมาย {
        Scanner reader = new Scanner(System.in);
        // call method
```

```
        open ();
        System.out.print("Enter music name to play: ");
play(reader.nextLine()); // call method with 1 argument
        System.out.println("Where do you want to seek music to?");
        int min sec; //ต้องใส่เครื่องหมาย , ระหว่าง  min sec
        System.out.print("Enter minute: ");
        min = reader.nextInt();
        system.out.print("Enter second: "); // System
        sec = reader.nextInt();
        seekTo(sec, min); // call method with 2 arguments
    }
    // no parameter method
    public static void open () {
        System.out.println("Music player started.") //ต้องใส่เครื่องหมาย ;
    }
    // method with one parameter
    public static void play (String name) {
        System.out.println("Playing your music \" " + name + "\"");
    }
    // method with two parameters
    public static void seekTo (int sec, int min) //ต้องใส่เครื่องหมาย ;
        System.out.println("Seek music to " + min + ":" + sec);
```

```
    }
}
```

7. Else-If

```
import java.util.Scanner;
public class ElseIf //ต้องใส่เครื่องหมาย {
    public static void main(String[] args) {
        Scanner sn = new Scanner(System.in);
        System.out.println("\tScore Evaluation Program");
        System.out.print("Enter your score between 0 - 100: ");

        int score = sn.nextInt() //ต้องใส่เครื่องหมาย  ;
        if (score < 0 || score > 100) {
            System.out.println("You must enter a correct score, try again later.");
        } else {
            if (score >= 80) {
                system.out.println("Your score is excellent."); //system
                System.out.println("You grant grade S.");
            } else if (score >= 60) {
                System.out.println("Your score is good.");
                System.out.println("You grant grade A.");
             else if (score >= 40) { //ต้องใส่เครื่อง } ไว้ข้างหน้า else if
                System.out.println("Your score is fair.");
```

```
            System.out.println("You grant grade B.");
        } else {
System.out.println("Your score is poor.");
            System.out.println("You grant grade C.");
        // ต้องใส่เครื่องหมาย }
    }
  }
}
```

8. Access Modifiers

```
public Class TestFruit { //class
  public static void main (String[] args) {
    Fruit fr = new Fruit();
    fr.name = "Grape";
    fr.flavor = "sour" // ;
    fr.setColor("green");
    System.out.println("Fruit name: " + fr.name);
    System.out.println("Flavor: " + fr.flavor);
    System.out.println("Color: " + fr.getColor(); //());
  }
}
Class Fruit { //class
  public String name;
```

```
   String flavor;
   private String color;
   public String getColor () {
      return color;
   }
   public void setColor (String c) {
      color = c // ;
   }
}
```

9. Finally

```
import java.io.BufferedReader;
import java.io.File;
import java.io.FileNotFoundException;
import java.io.FileReader //;
import java.io.IOException;
public class TestFileException {
   public static void main(String[] args) {
      File file = new File("file.txt");
      BufferedReader reader = null;
      try //{
         reader = new BufferedReader(new FileReader(file));
         String text = null;
```

```
        while ((text = reader.readLine()) != null) {
            system.out.println(text); //System
        }
    } catch (FileNotFoundException e) {
        e.printStackTrace();
    } catch (IOException e) {
        e.printStackTrace();
    } finally {
        try {
            if (reader != null) {
                Reader.close(); //reader
            }
        } catch (IOException e) {
        //}
    }
  }
}
```

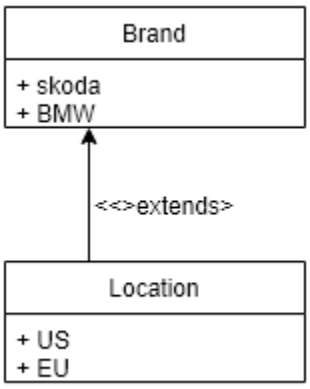
10. Inheritance

```
Class Artist extends Person { //class
  string genre; //String
  public Artist (String name, int age) {
    this.name = name;
```

```
        this.age = age;
    }
    public void playMusic () //{
        System.out.println(name + " is playing " + genre + " music.");
    }
}
class Athlete extends Person //{
    String sport;
    public Athlete (String name, int age) {
        this name = name; // เครื่องหมาย . ระหว่าง this name
        this.age = age;
    }
    public void playSport () {
        System.out.println(name + " is playing " + sport + "."); // } }
```

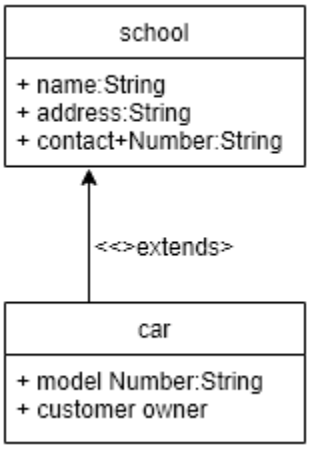
3. Class Diagram 10 โปรแกรม

1.




```
class Brand {

 private String skoda;

 private String BMW;

 private Location location;



}

class Location {

 private String US;

 private String BU;

}
```

2.

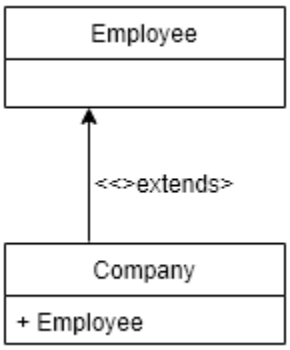



```
public class Customer {

 private String name;

 private String address;

 private String contactnumber;
```

```
}

public class Car {

 private String modelNumber;

 private Customer owner;

}
```

3.

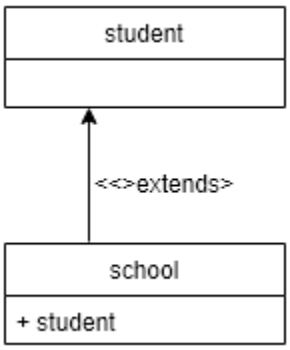
```
public class Employee {}
```




```
public class Company {

 private Employee[] employee;

}
```

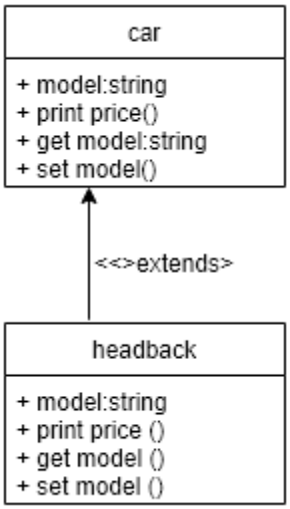
4.

```
public class student {}

public class school {

 private student Student;

}
```



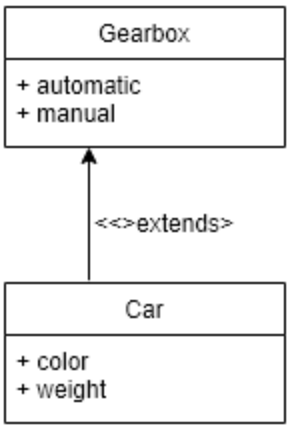
5.

```
public class car {
 private String model;
 public void print price() {
 }
 public String getmodel() {
  return model;
 }
 public void setmodel(String model) {
  this.model = model;
 }
}
public class headback extends car {
 private String model;
 public void print price() {
  System.out.println("Headback Price");
 }
```



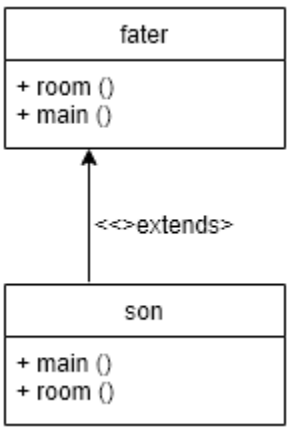
```
public String getmodel()
  return model;
}
public void setmodel(String model) {
  this.model = model;
 }
}
```

6.




```
class car {
  private String color;
  private int weight;
 }
class Gearbox {
  enmu Gearbox {automatic,manual}
}
```

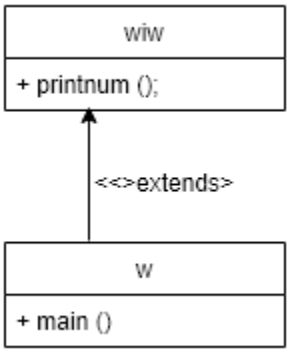
7.




```
class father {

 void room(){

  System.out.println("room in father");

 }

public static void main (String args[]) {

  System.out.println("I am father");

 }

}

class son extends father {

  public static void main (String args[]) {

   friend x = new friend();

   System.out.println("main");

   x.room();

   son y = new son();

  }

   void room() {
```

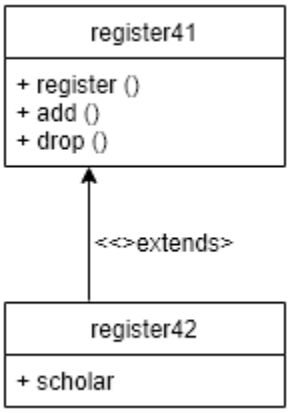
```
    System.out.println("room in son");
  }
}
```

8.




```
class wiw {
 public static void main (String args[]) {
   printnum();
  }
}
```

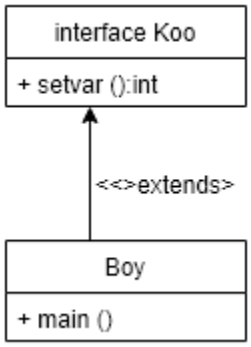
9.




```
public class register41 {
  public register(){}
  public add(){}
  public drop(){}
 }
public class register42 {
 public scholar() {}
```

}

10.




```
interface KOO {
 public int setvar();
 }
 class boy extends KOO {
   public static void main(String args[]) {
  }
}
```

4. Array การรับค่าจากแป้นพิมพ์

1.

```
public static void main (String args[]){
 char c = "0"; char a = "1"; int b = c; int d = a; //ประกาษตัวแปร
  System.out.println(b); //ผลลัพธ์คือ 97
  System.out.println(d); //ผลลัพธ์คือ 100 จากตัวแปลง char เป็น int
 }
}
```

2.

```
public static void main (String args[]){
 char p[] = new char[2]; //ประดาษตัวแปร
   p[0] = 97; p[1] =48;
   System.out.println (p); //ผลลัพธ์คือ 20
}
```

3.

```
public static void main (String args[]){
 char p[] = new char[2]; //ประกาษตัวแปร
  p[0] = 65; p[1] =66;
   System.out.println (p); //ผลลัพธ์คือ AB แปลงค่า array เป็น char
}
```

4.

```
public class wiw7 {
 public static void main (String args[]){
  String[] cars = {"Volvo","BMW"};
   for (String i : cars) { //ตรวงสอบให้ cars เก็บค่าให้ที่ i
   System.out.println(i); //แสดงผลลัพธ์ "Value,BMW"
  }
 }
}
```

5.

```
public static void main (String args[]){
 char p[] = {"a","b","c"}; //ประกาศตัวแปร char
 System.out.println("p= "+ String.Value(p)); //pทำการแปลง ตัวแปรcharเป็นString
 }
}
```

6.

```
public static void main (String args[]){
 char c = "9"; //ประกาศตัวแปร char
 int a = Character.getNumericValue(c); //แปลงตัวอักษร char เป็น int
 System.out.println(a); //ผลลัพธ์คือ "9"
```

```
 }
}
```

7.

```
class wiw4 {
 public static void main (String args[]){
  int ww[][] = {{1,2,3,4},{5,6,7}};
  int x = ww [1][0]; //เก็บค่า array ตัวที่ 1 โดยมีค่าตอบ
  System.out.println(x); //แสดงผลลัพธ์ (5)
 }
}
```

8.

```
import java.io.*;
 class wiw3 {
 public static void main(String args[]) throws IOException {
 String a[] = new String[5]; //array 5 รอบ 1 ตัวที่รับได้ 1 ครั้ง
 BufferedReader stdin = new BufferedReader(new InputStreamReader(System.in));
 int y; //ประกาศตัวแปรเก็บค่า
  for (int i=0; i<=2; i++) {
    a[i] = stdin.readLine();
   } //เก็บค่าที่รับมาไปเก็บไว้ในตัวแปร array
```

```
  for (int i=0; i<=2; i++) {
     y = Integer.parseInt(a[i]); //แปลง array ตัวแปร y ให้เป็นตัวเลข
     System.out.println((char)y+" "); //แสดงผลและแปลงค่า Int เป็น char เป็นผลลัพธ์
   }
 }
}
```

9.

```
public class wiw2 {
public static void main (String args[]) {
 String ary[] = {"1","2","3"};
 System.out.println(ary[0]);
 }
}
```

//กำหนดค่าใน array แสดงผลลัพธ์ array ที่ 0 คือ "1"

10.

```
public class wiw1 {
public static void main (String args[]) {
 String ary[] = {"1","2","4"};
 System.out.println(ary.length);
 }
```

```
}

//แสดงผลของจำนวน array ทั้งหมด = "3"
```

5. substring / % max min avg total

1.

```
class wiw1 {
  pulic static void main (String args[]) {
    int i = 1; int j = 5;
    System.out.println(Math.Min(i,j)); //ผลลัพธ์คือ 5
 }
}
```

2.

```
public class wiw2 {
  public static void main (String args[]) {
  String m = "nichapa";
  System.out.println (S.SubStribng(0));
 }
}          //ผลลัพธ์คือ 0
```

3.

```
class wiw3
  pulic static void main (String args[]) {
```

```
  int i > 12; int j = 13;
    System.out.println (Math.Max(i,j)); //Math.Max หาค่าตัวแปรตัวที่มีค่ามากกว่า
 }
}       //ผลลัพธ์คือ 13
```

4.

```
class wiw4 {
  pulic static void main (String args[]) {
  int i = 12; int j = 2;
    System.out.println (Math.Min(i,j));
    System.out.println (Math.Max(i,j)); //ผลลัพธ์คือ 2,12
 }
}
```

5.

```
package com.olanlab.share.static
impord java.otil.scannor;
  public class wiw5 {
  scannor sean = new scannor (System in);
  System.out.print ("Bntev number");
```

```
  int num = scan.nextInt();
    couble num = 0;  //ประกาศ ต้องเป็นผลรวม
  for (int i = 0; i < num; i++) {
      sum += scan.nextInt();
    }
     System.out.println ("ผล" + sum/num);
  }
}
```

6.

```
public class wiw6 {
  public static void main (String args[]) {
  int i = 12; int j = 2;
  System.out.println(i/j);
  }
}
```

//โปรแกรมที่จะทำการคำนวณในส่วนแสดงผลลัพธ์ของผลไว้ในตัว

7.

```
pulic class wiw7 {
  public static void main (String args[]){
    String m = "kawinthara";
    System.out.println(w.sunstring(0,10));
 }
}
```

8.

```
pulic class wiw8 {
  public static void main (String args[]){
  int product = 2000; int sear = 0;
  while (product + 365) ;
    year++ ;
  System.out.println("ให้รวมทั้งหมด" + year + "ปี");
 }
}
```

9.

```
pulic class wiw9 {
  public static void main (String args[]){
    int i = 10;
    System.out.println(i/5);
 }
}
```

//โปรแกรมมีการหารจาก i/5 ตามผลลัพธ์ มี22ผลลัพธ์

10.

```
pulic class wiw10 {
  public static void main (String args[]){
    int i = 12; int j = 3; int x = 8;
    System.out.println(i/j/x);
 }
}
```