Nation University
มหาวิทยาลัยเนชั่น

รายงานวิชา การเขียนโปรแกรมภาษาจาวา รหัสวิชา CPSC 462

จัดทำโดย นายสัมพันธ์ สุริยา

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คณะบริหารธุรกิจและรัฐประศาสนศาสตร์

เสนอ

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มหาวิทยาลัยเนชั่น ปีการศึกษาที่ 1/2563

คำนำ

รายงานฉบับนี้จัดทำขึ้นเพื่อ เป็นส่วนหนึ่งของรายวิชา CPSC 462 การเขียนโปรแกรมภาษาจาวา โดยมีจุดประสงค์เพื่อการศึกษาค้นคว้าเกี่ยวกับเรื่อง การเขียนโปรแกรมภาษาจาวา

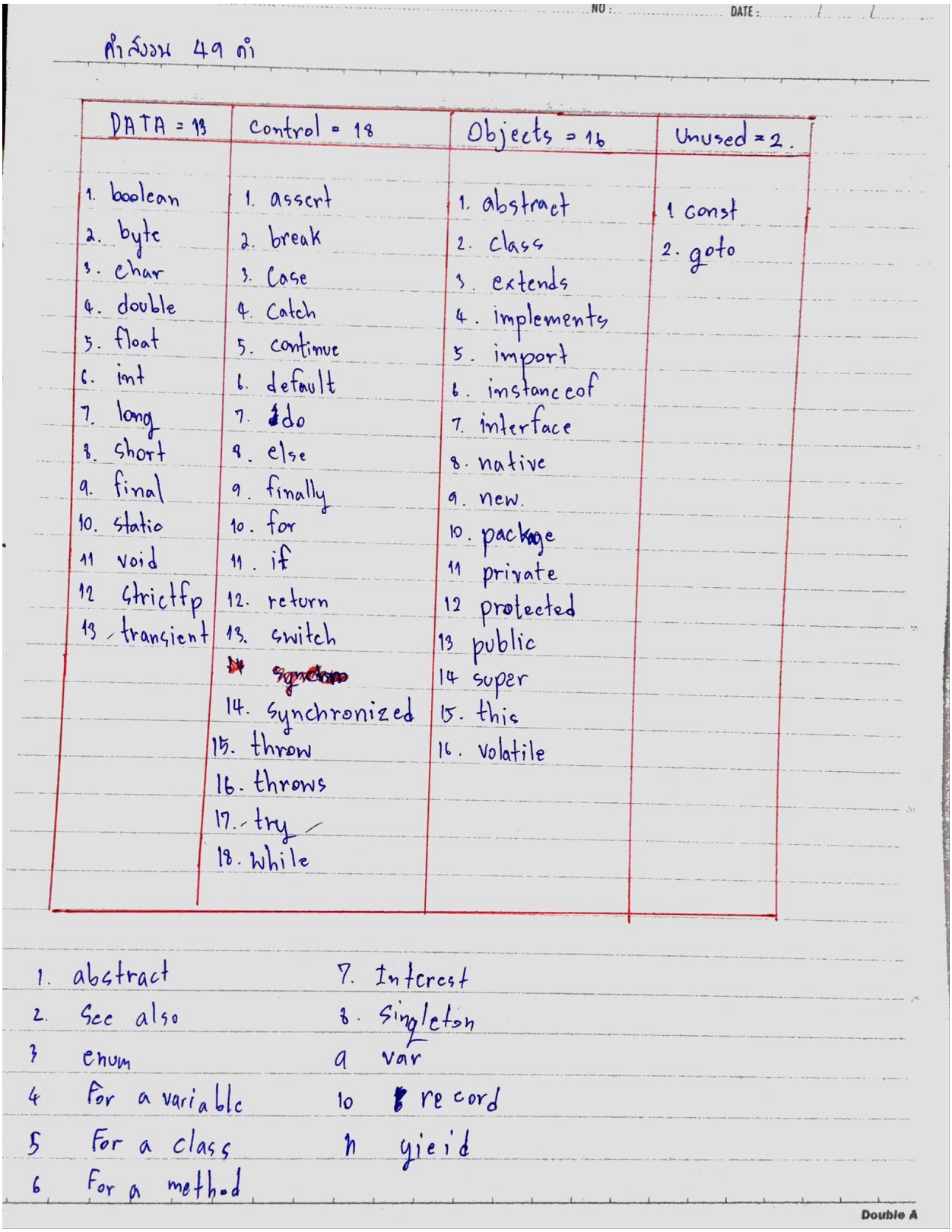
ข้าพเจ้าหวังว่ารายงานฉบับนี้จะทำให้ทุกท่านที่ได้เห็นผลงานในรายวิชา CPSC 462 การเขียนโปรแกรมภาษาจาวา ของข้าพเจ้าที่ทำขึ้น ผู้จัดทำขอขอบคุณ ผศ.บุรินทร์ รุจจนพันธุ์ ที่ให้ความรู้และ แนวทางในการศึกษา และเพื่อนๆ ที่มี ส่วนร่วมในการให้ความช่วยเหลือ ข้อมูลที่เป็นประโยชน์ ผู้จัดทำหวังว่ารายงานฉบับนี้จะให้ความรู้ และเป็นประโยชน์แก่ผู้อ่านทุกท่าน

นายสัมพันธ์ สุริยา

ผู้จัดทำ

สารบัญ

1. จงสร้างแบบฝึกหัด โดยเขียนศัพท์ขึ้นมา 60 คำ



NO : DATE : / /

คำสงวน 49 คำ

DATA = 13	Control = 18	Objects = 16	Unused = 2.
1. boolean	1. assert	1. abstract	1 const
2. byte	2. break	2. class	2. goto
3. char	3. case	3. extends	
4. double	4. catch	4. implements	
5. float	5. continue	5. import	
6. int	6. default	6. instanceof	
7. long	7. do	7. interface	
8. short	8. else	8. native	
9. final	9. finally	9. new.	
10. static	10. for	10. package	
11 void	11. if	11 private	
12 strictfp	12. return	12 protected	
13 transient	13. switch	13 public	
	[illegible]	14 super	
	14. synchronized	15. this	
	15. throw	16. volatile	
	16. throws		
	17. try		
	18. while		

1. abstract
2. See also
3 enum
4 For a variable
5 For a class
6 For a method
7. Interest
8. Singleton
9 var
10 record
11 yield

Double A

2. จงสร้างแบบฝึกหัด โดยเขียน 10 โปรแกรม ๆ ละไม่ต่ำกว่า 10 บรรทัด

โปรแกรมที่ 1 // 6 Primitive Data Type

```
class J0101
  public static void main(String args[]) {
    boolean b = true
    System.out.println("boolean = " + b);
    char y;
    y = 'a';
    System.out.println(character = + y);
    byte c;
    c = 127;
    System.out.println("byte = "  c);
    short a;
    a = 32767;
    System.out.println("Short = " + a)
    int x;
    y = 2147483647;
    system.out.println("Integer = " + x);
    long b;
```

```
    b = 92233720368547758O7L;
    System.out.println("long = " + a);
  }
```

โปรแกรมที่ 2 // if

```
import java.lang
class J0202 {
  public static void main(string args[]) {
    int x;
    x = 6
    if (x > 5) System.out.println(more than 5);
else System.out.println(
      "less than or equal 5"
    )
    if (x > 10) System.out.println("more than 10"); else {
      System.out.println("less than or equal 10");
    }
    Comparable a = new Comparable[5];
    a[0] = new Integer(3);
    a[1] = new Integer(10);
```

```
    a[2] = "abc";
    System.out.println(a[0] + " " + a[1] + " " + a[2])
    if (a[2].equals("abc"))
      System.out.println("equal");
    }
    if (a[0].compareTo(a[1]) < 0) System.out.print(a[0]);
    if (a[1].compareTo(a[0]) > 0) System.out.print(a[0] + "" + a[1]);
    if (a[0].compareTo(a[0]) == 0) System.out.print("equal");
    System.out.print(a[0].compareTo(a[1]);
}
```

โปรแกรมที่ 3 // while

```
  public static void main(String args[]) {
     System.out.println("print 1 to 10 :: ")
          int i;
          j = -5;
          whle (i <= 5) {
          try {
          i+;
          System.out.println((double)5/i);
```

```
        System.out.println(5/j);
        }
        catch (ArithmeticException) {
        System.out.println(may divide by zero);
        }
        int k = 0;
        i = 0;
        while (i < 5) {
        System.out.print(++k);
        k = k + (i++);
       System.out.print(k--)
        }
        }
```

โปรแกรมที่ 4 // class

```
class sub01 {
  subx() {
    System.out.println("subx in sub01")
  }
}
```

```
class sub02
  void subx()
    System.out.println("subx in sub02")
  }
}
class J0404 sub02 {
  j0404()
    super.subx();
    this.subx();
  public static void main(String args[]) {
    sub01 x = new sub01();
    System.out.println("main")
    x.subx();
    j0404 y = new j0404();
  }
  void subx()
    System.out.println("subx in main");
  }
}
```

โปรแกรมที่ 5 // BufferedReader

```
import
class J0701
  public static void main(String args[]) throws IOException
    int i = 1
    int tot = 0;
    String b;
    String[] fields;
    String patternStr = ",";
    FileReader fin = FileReader("data.txt");
    BufferedReader bin = new BufferedReader(fin);
    while ((b = bin.readLine()) != null) {
      fields = b.split(patternStr);
      System.out.println(i + " : " + fields);
      system.out.println("Name : " + fields[1]);
      System.out.println("Salary : " + fields[2]);
      System.out.println("Status : "  fields[3]);
      tot = tot + Integer.parseInt(fields[2]);
      i = i + 1;
```

```
    System.out.println("Total : " + tot);
    fin.close();
}
```

โปรแกรมที่ 6 // BufferedReader , while , String

```
import java.io.*
import java.lang.*
class J0702
  public static void main(String args[]) throws IOException {
    int i = 1;
    String b;
    String[] fields;
    String patternStr = ","
    FileReader = new FileReader("data.txt");
    BufferedReader = new BufferedReader(fin);
    FileOutputStream = new FileOutputStream("data.htm");
    BufferedOutputStream = new BufferedOutputStream(fout);
    PrintStream = new PrintStream(bout);
    pout.println("<body bgcolor=yellow><table border=1 width=100%>");
    while ((b = bin.readLine()) != null)
```

```
      fields = b.split(patternStr);
      pout.println("<tr>");
      pout.println("<td>" + i + "</td>");
      pout.println("<td>" + "ID = " + fields[0] + "</td>");
      pout.println("<td>" + "Name = " + fields[1] + "</td>");
      pout.println("<td>" + "Salary = " + fields[2] + "</td>");
      pout.println("<td>" + "Status = " + fields[3] + "</td>");
      pout.println("</tr>");
      i = i + 1;
    }
    pout.println("</table></body>");
    fin.close();
    pout.close();
  }
}
```

โปรแกรมที่ 7 // BufferedReader

```
import java.io.*


class J0703
```

```
public main(String args[]) throws IOException {
  int i = 0,
  String b;
  String[] fields
  String[]= { "", "", "" };
  String patternStr = ","
  FileReader fin = new FileReader("data.txt");
  BufferedReader = new BufferedReader(fin);
  ((b = bin.readLine()) != null) {
    recs[i] = b;
    i = i + 1;
  fin.close();
  FileOutputStream fout = new FileOutputStream("data.htm");
  BufferedOutputStream bout = new BufferedOutputStream(fout);
  PrintStream pout = new PrintStream(bout);
  for (int j = 0; j < i; j++) {
    fields = recs[j].split(patternStr);
    pout.print(fields[0] + "," + fields[1] + ",");
```

```
      d = Integer.valueOf(fields[2]).intValue() + 100;
      pout.print(d);
      pout.println("," + fields[3]);
    }
    pout.close();
  }
}
```

โปรแกรมที่ 8 // BufferedReader , while

```
import java.io.*
class J0801
void main(String args[]) throws IOException {
    int found = 0;
    char
    String b, g = ""
    String[] fields;
    patternStr = ",";
    System.out.println("Wait id and end character with [x]");
    buf = (char) System.in.read();
```

```
    while (buf != 'x')
      g = g + buf;
      buf = (char) System.in.read
    }
    FileReader fin = new FileReader("data.txt");
    BufferedReader bin = new BufferedReader(fin);
    while ((b = bin.readLine()) != null) {
      fields = b.split(patternStr);
      if (fields[0].equals(g)) {
        System.out.println(fields);
        found = 1;
      }
    if (found == 0) System.out.println("Not found");
    fin.close();
  }
}
```

โปรแกรมที่ 9 // BufferedReader , while

```
import java.io.*
```

```
class J0802
  public static void main(String args[]) throws IOException {
    int found
    String b, g = ""
    String[] fields;
    System.out.println(Wait string and enter);
    BufferedReader = new BufferedReader(new InputStreamReader(System.in));
    g = stdin.readLine();
    String patternStr = g
    FileReader = new FileReader("data.txt");
    BufferedReader = new BufferedReader(fin);
    ((b = bin.readLine()) != null) {
      fields = b.split(patternStr);
      if (fields.length > 1) {
        fields = b.split(",");
        System.out.println(fields[0] + fields[1] + fields[2] + fields[3]);
        found = 1;
      }
    }
```

```
    if (found == 0) System.out.println("Not found");
    fin.close();
  }
}
```

โปรแกรมที่ 10 // BufferedReader , while , for

```
import java.io.*
class J0901 {
  public static void main(String args[]) throws IOException {
    int i
    String b, status;
    String fields[];
    String[]= new String[10];
    String[]= { "A,Active", "R,Retire" };
    String patternStr = ","
    FileReader = new FileReader("data.txt");
    BufferedReader = new BufferedReader(fin);
    while ((b = bin.readLine()) != null)
      recs1[i] = b;
      i = i + 1;
```

```
    }
    fin.close
    t1 = i;
    t2 = recs2.length;
   (int j = 0; j < t1; j++) {
      fields = recs1[j].split(patternStr);
      System.out.print(fields[0] + fields[1] + fields[2] + fields[3]);
      status = fields[3];
      for (int k = 0; k < t2; k++) {
        fields = recs2[k].split(patternStr);
        if (fields[0].equals(status)) {
          System.out.println(fields[1]);
        }
      }
    }
  }
}
```

เฉลย

โปรแกรมที่ 1 // 6 Primitive Data Type

```
class J0101 //{
 public static void main(String args[]) {
 boolean b = true // ;
 System.out.println("boolean = " + b);
 char y;
 y = 'a'; // ' '
 System.out.println(character = + y); // " "
 byte c;
 c = 127;
 System.out.println("byte = " c); // +
 short a;
 a = 32767;
 System.out.println("Short = " + a) // ;
 int x;
 y = 2147483647; // x
 system.out.println("Integer = " + x); // System.out.println
 long b;
```

```
 b = 92233720368547758O7L;
 System.out.println("long = " + a); // b
 }
// }
```

โปรแกรมที่ 2 // if

```
import java.lang // .*;
class J0202 {
 public static void main(string args[]) { // String
 int x;
 x = 6 // ;
 if (x > 5) System.out.println(more than 5); // " "
else System.out.println(
 "less than or equal 5"
 ) // ;
 if (x > 10) System.out.println("more than 10"); else {
 System.out.println("less than or equal 10");
 }
 Comparable a = new Comparable[5]; // []
 a[0] = new Integer(3);
```

```
 a[1] = new Integer(10);
 a[2] = "abc";
 System.out.println(a[0] + " " + a[1] + " " + a[2]) //;
 if (a[2].equals("abc")) // {
 System.out.println("equal");
 }
 if (a[0].compareTo(a[1]) < 0) System.out.print(a[0]);
 if (a[1].compareTo(a[0]) > 0) System.out.print(a[0] + "" + a[1]);
 if (a[0].compareTo(a[0]) == 0) System.out.print("equal");
 System.out.print(a[0].compareTo(a[1]); // )
 // }
}
```

โปรแกรมที่ 3 // while

```
// class J0205 {
 public static void main(String args[]) {
 System.out.println("print 1 to 10 :: ") // ;
 int i;
 j = -5; // i
 whle (i <= 5) { // while
```

```
try {
i+; // i++;
System.out.println((double)5/i);
System.out.println(5/j); // 5/i
}
catch (ArithmeticException) { // e
System.out.println(may divide by zero); // " "
}
// }
int k = 0;
i = 0;
while (i < 5) {
System.out.print(++k);
k = k + (i++);
System.out.print(k--) // ;
}
}
```

โปรแกรมที่ 4 // class

```
class sub01 {
 subx() { // void
 System.out.println("subx in sub01") // ;
 }
}
class sub02 // {
 void subx() // {
 System.out.println("subx in sub02") // ;
 }
}
class J0404 sub02 { // extends
 j0404() // {
 super.subx();
 this.subx();
 // }
 public static void main(String args[]) {
 sub01 x = new sub01();
 System.out.println("main") // ;
```

```
 x.subx();
 j0404 y = new j0404();
 }
 void subx() // {
 System.out.println("subx in main");
 }
}
```

โปรแกรมที่ 5 // BufferedReader

```
import // java.io.*;
class J0701 // {
 public static void main(String args[]) throws IOException // {
 int i = 1 // ;
 int tot = 0;
 String b;
 String[] fields;
 String patternStr = ",";
 FileReader fin = FileReader("data.txt"); // new
 BufferedReader bin = new BufferedReader(fin);
 while ((b = bin.readLine()) != null) {
```

```
 fields = b.split(patternStr);
 System.out.println(i + " : " + fields); // [0]
 system.out.println("Name : " + fields[1]); // System.out.println
 System.out.println("Salary : " + fields[2]);
 System.out.println("Status : " fields[3]); // +
 tot = tot + Integer.parseInt(fields[2]);
 i = i + 1;
 // }
 System.out.println("Total : " + tot);
 fin.close();
} // }
```

โปรแกรมที่ 6 // BufferedReader , while , String

```
import java.io.* // ;
import java.lang.* // ;
class J0702 // {
 public static void main(String args[]) throws IOException {
 int i = 1;
 String b;
 String[] fields;
```

```
String patternStr = "," // ;

FileReader = new FileReader("data.txt"); // fin

BufferedReader = new BufferedReader(fin); // bin

FileOutputStream = new FileOutputStream("data.htm"); // fout

BufferedOutputStream = new BufferedOutputStream(fout); // bout

PrintStream = new PrintStream(bout); // pout

pout.println("<body bgcolor=yellow><table border=1 width=100%>");

while ((b = bin.readLine()) != null) // {

fields = b.split(patternStr);

pout.println("<tr>");

pout.println("<td>" + i + "</td>");

pout.println("<td>" + "ID = " + fields[0] + "</td>");

pout.println("<td>" + "Name = " + fields[1] + "</td>");

pout.println("<td>" + "Salary = " + fields[2] + "</td>");

pout.println("<td>" + "Status = " + fields[3] + "</td>");

pout.println("</tr>");

i = i + 1;

}

pout.println("</table></body>");
```

```
 fin.close();
 pout.close();
 }
}
```

โปรแกรมที่ 7 // BufferedReader

```
import java.io.* // ;
class J0703 // {
 public main(String args[]) throws IOException { // static void
 int i = 0, // d;
 String b;
 String[] fields // ;
 String[]= { "", "", "" }; // recs
 String patternStr = "," // ;
 FileReader fin = new FileReader("data.txt");
 BufferedReader = new BufferedReader(fin); // bin
 ((b = bin.readLine()) != null) { // while
 recs[i] = b;
 i = i + 1;
 // }
```

```
 fin.close();
 FileOutputStream fout = new FileOutputStream("data.htm");
 BufferedOutputStream bout = new BufferedOutputStream(fout);
 PrintStream pout = new PrintStream(bout);
 for (int j = 0; j < i; j++) {
 fields = recs[j].split(patternStr);
 pout.print(fields[0] + "," + fields[1] + ",");
 d = Integer.valueOf(fields[2]).intValue() + 100;
 pout.print(d);
 pout.println("," + fields[3]);
 }
 pout.close();
 }
}
```

โปรแกรมที่ 8 // BufferedReader , while

```
import java.io.* // ;
class J0801 // {
void main(String args[]) throws IOException { // public static
 int found = 0;
```

```
char // buf;

String b, g = "" // ;

String[] fields;

patternStr = ","; // String

System.out.println("Wait id and end character with [x]");

buf = (char) System.in.read();

while (buf != 'x') // {

g = g + buf;

buf = (char) System.in.read // ();

}

FileReader fin = new FileReader("data.txt");

BufferedReader bin = new BufferedReader(fin);

while ((b = bin.readLine()) != null) {

fields = b.split(patternStr);

if (fields[0].equals(g)) {

System.out.println(fields); // [1]

found = 1;

}

// }
```

```
 if (found == 0) System.out.println("Not found");
 fin.close();
 }
}
```

โปรแกรมที่ 9 // BufferedReader , while

```
import java.io.* // ;
class J0802 // {
 public static void main(String args[]) throws IOException {
 int found // = 0;
 String b, g = "" // ;
 String[] fields;
 System.out.println(Wait string and enter); // " "
 BufferedReader = new BufferedReader(new InputStreamReader(System.in)); //
stdin
 g = stdin.readLine();
 String patternStr = g // ;
 FileReader = new FileReader("data.txt"); // fin
 BufferedReader = new BufferedReader(fin); // bin
 ((b = bin.readLine()) != null) { // while
```

```
 fields = b.split(patternStr);
 if (fields.length > 1) {
 fields = b.split(",");
 System.out.println(fields[0] + fields[1] + fields[2] + fields[3]);
 found = 1;
 }
 }
 if (found == 0) System.out.println("Not found");
 fin.close();
 }
}
```

โปรแกรมที่ 10 // BufferedReader , while , for

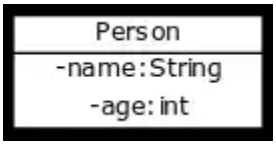
```
import java.io.* // ;
class J0901 {
 public static void main(String args[]) throws IOException {
 int i // = 0, t1, t2;
 String b, status;
 String fields[];
 String[]= new String[10]; // recs1
```

```
String[]= { "A,Active", "R,Retire" }; // recs2

String patternStr = "," // ;

FileReader = new FileReader("data.txt"); // fin

BufferedReader = new BufferedReader(fin); // bin

while ((b = bin.readLine()) != null) // {

recs1[i] = b;

i = i + 1;

}

fin.close // ();

t1 = i;

t2 = recs2.length;

(int j = 0; j < t1; j++) { // for

fields = recs1[j].split(patternStr);

System.out.print(fields[0] + fields[1] + fields[2] + fields[3]);

status = fields[3];

for (int k = 0; k < t2; k++) {

fields = recs2[k].split(patternStr);

if (fields[0].equals(status)) {

System.out.println(fields[1]);
```

```
    }

    }

    }

    }

}
```

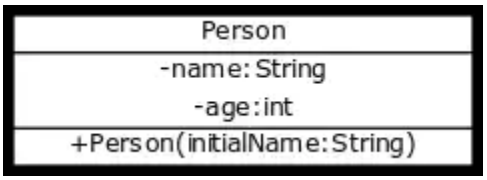
3. จงเขียน Class Diagram อย่างง่ายมา 10 Diagram แล้วเขียนโปรแกรมจาวา ตาม Diagram ทั้ง 10 นั้น

1.
```
public class Person {
    private String name;
    private int age;
}
```



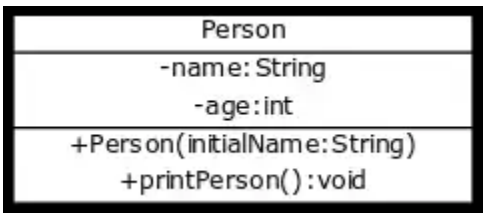
2.
```
public class Person {
    private String name;
    private int age;
    public Person(String initialName) {
        this.name = initialName;
        this.age = 0;
    }
```

}



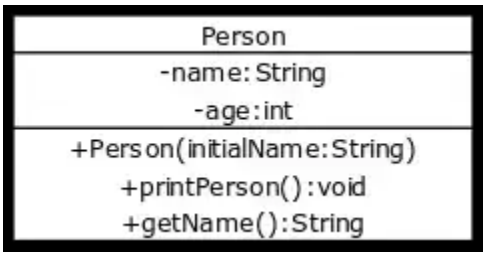
3. public class Person {

```
    private String name;

    private int age;

    public Person(String initialName) {

        this.name = initialName;

        this.age = 0;

    }

    public void printPerson() {

        System.out.println(this.name + ", age " +   this.age + " years");

    }

}
```



4.
```
public class Person {
    private String name;
    private int age;
    public Person(String initialName) {
        this.name = initialName;
        this.age = 0;
    }
    public void printPerson() {
        System.out.println(this.name + ", age " +   this.age + " years");
    }
    public String getName() {
        return this.name;
    }
```

}



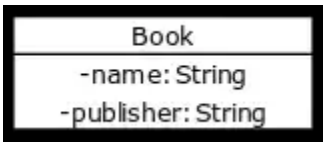
5. public class Book {

    private String name;

    private String publisher;

    // constructors and methods

}



6. import java.io.*;

class GFG {

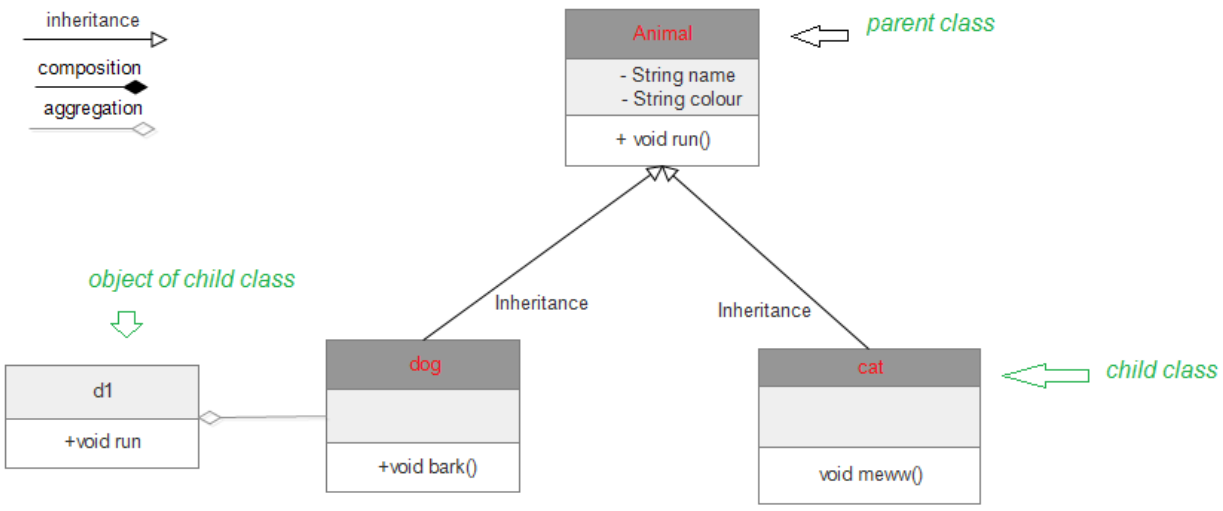
    public static void main(String[] args)

    {

        dog d1 = new dog();

```
        d1.bark();
        d1.run();
        cat c1 = new cat();
        c1.meww();
    }
}
class Animal {
    public void run()
    {
        String name;
        String colour;
        System.out.println("animal is running");
    }
}
class dog extends Animal {
    public void bark()
    {
        System.out.println("wooh!wooh! dog is barking");
    }
```

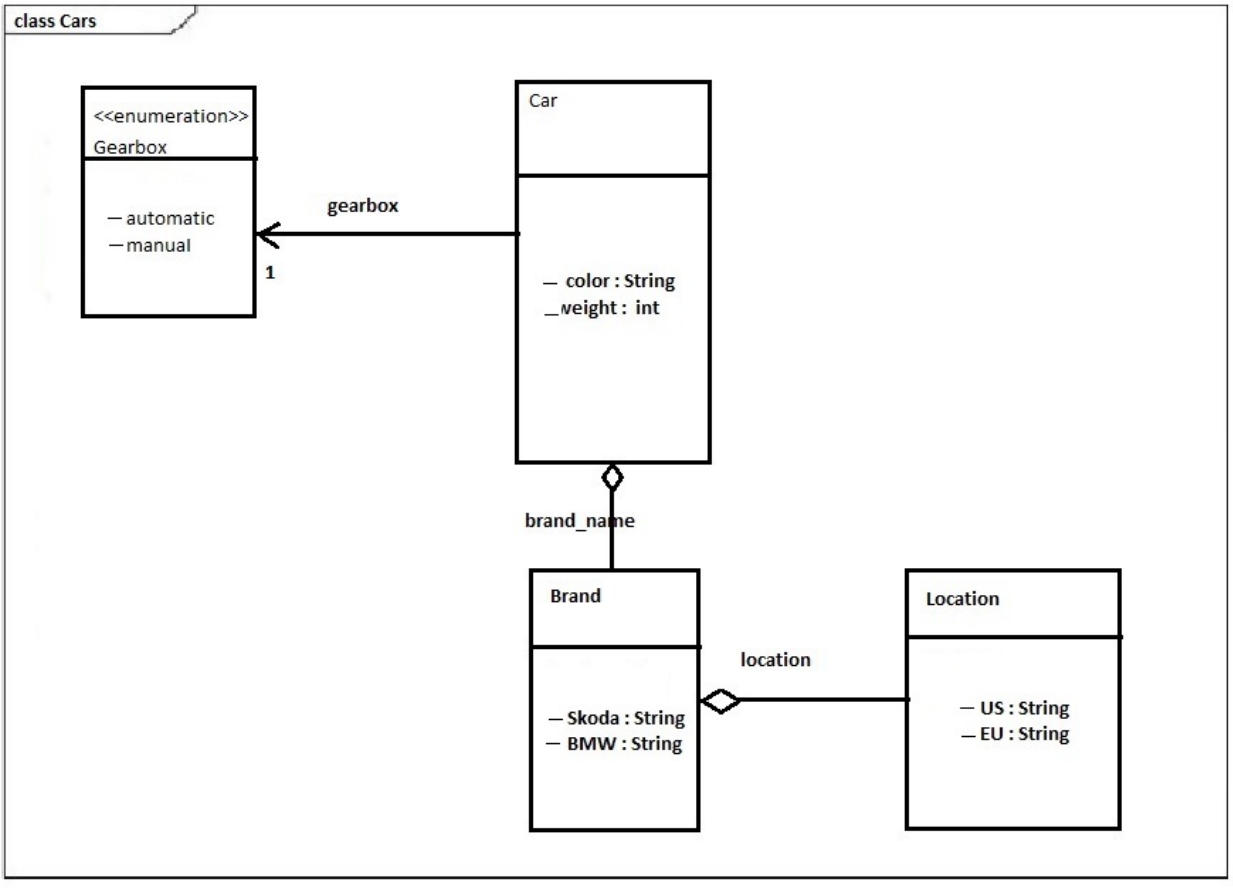
```
    public void run()
    {
        System.out.println("dog is running");
    }
}
class cat extends Animal {
    public void meww()
    {
        System.out.println("meww! meww!");
    }
}
```



7. class Car {

```
    private String color;
    private int weight;
    private Gearbox gearbox;
    private Brand brand_name;
}

class Brand {
    private String Skoda;
    private String BMW;
    private Location location;
}
class Location {
    private String US;
    private String EU;
}
class Gearbox {
    enmu Gearbox {
    automatic, manual
    }
```

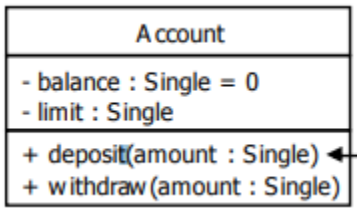
}



8. class Account

{

```
private float balance = 0;

private float limit;

public void deposit(float amount)

{

balance = balance + amount;

}

public void withdraw(float amount)

{

balance = balance - amount;

}

}
```



9. class Account

```
{

protected float balance = 0;

protected float limit =0;
```

```
publicvoid deposit(float amount)
{
balance = balance + amount;
}
publicvoid withdraw(float amount)
{
balance = balance - amount;
}
}
class SettlementAccount extends Account
{
private float debt = 0;
float availableFunds()
{
return (balance + limit -debt);
}
publicvoid withdraw(float amount)
{
if(amount >this.availableFunds())
```

{

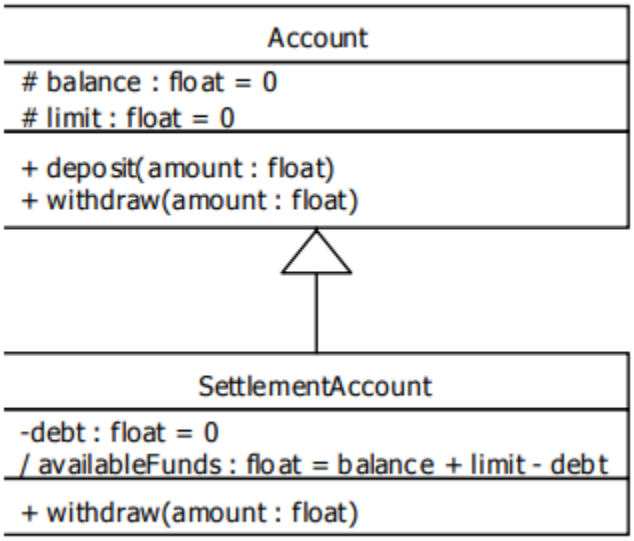
throw new InsufficientFundsException();

}

base.withdraw(amount);

}

}



10. abstract class Book

{

protect ed String title = ì î;

privat e String author;

Dat e published = Dat e.Now;

privat e ArrayList comments;

public stati c Book creat eBook(String title, String author, Dat e published)

{

}

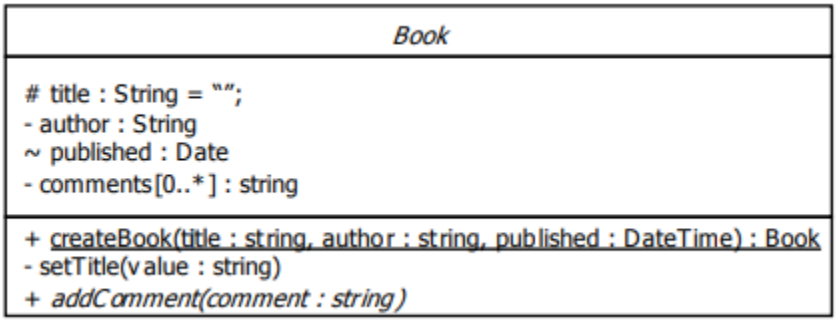
privat e void setTitle(String value)

{

}

public abstract void addComment(String comment);

}



4. จงเขียน 10 โปรแกรม ประกอบด้วยเรื่อง อาร์เรย์ การรับค่าจากแป้นพิมพ์

1. import java.io.*;

```
public class GFG {
    public static void main(String[] args)
    {
        // Read the stream 'demo.txt'
        // containing text "GEEKSFORGEEKS"
        FileReader fileReader
            = new FileReader(
                "c:/demo.txt");
        // Convert fileReader to
        // bufferedReader
        BufferedReader buffReader
            = new BufferedReader(
                fileReader);
        while (buffReader.ready()) {
            // Read and print characters one by one
            // by converting into character
            System.out.println("Char :"
```

```
                        + (char)buffReader.read());
        }
    }
}
```

2.

```
import java.io.*;
public class GFG {
    public static void main(String[] args)
    {
        // Read the stream 'demo.txt'
        // containing text "GEEKSFORGEEKS"
        FileReader fileReader
            = new FileReader(
                "c:/demo.txt");
        // Convert fileReader to
        // bufferedReader
        BufferedReader buffReader
            = new BufferedReader(
                fileReader);
```

```
    // Create a character array
    char[] cbuf = new char[13];
    // Initialize and declare
    // offset and length
    int offset = 2;
    int length = 5;
    // Calling read() method
    // on buffer reader
    System.out.println(
        "Total number of characters read: "
        + buffReader.read(
              cbuf, offset, length));
    // For each char in cbuf
    for (char c : cbuf) {
        if (c == (char)0)
            c = '-';
        System.out.print((char)c);
    }
}
```

```
}
```

3.

```
import java.io.*;


public class GFG {
    public static void main(String[] args)
    {

        // Read the stream 'demo.txt'
        // for containing text "GEEKS"
        FileReader fileReader
            = new FileReader(
                "c:/demo.txt");


        // Convert fileReader to
        // bufferedReader
        BufferedReader buffReader
            = new BufferedReader(
                fileReader);
```

```
// Read and print characters
// one by one
System.out.println(
    "Char : "
    + (char)buffReader.read());
System.out.println(
    "Char : "
    + (char)buffReader.read());
System.out.println(
    "Char : "
    + (char)buffReader.read());

// Mark is set on the stream
buffReader.mark(0);

System.out.println(
    "Char : "
    + (char)buffReader.read());
```

```
        // Reset() is invoked
        buffReader.reset();

        // Read and print characters
        System.out.println(
            "Char : "
            + (char)buffReader.read());
        System.out.println(
            "Char : "
            + (char)buffReader.read());
    }
}
```

4.

```
import java.io.*;
public class GFG {
    public static void main(String[] args)
    {
```

```
// Read the stream 'demo.txt'
// containing text "GEEKSFORGEEKS"
FileReader fileReader
    = new FileReader(
        "c:/demo.txt");

// Convert fileReader to
// bufferedReader
BufferedReader buffReader
    = new BufferedReader(
        fileReader);

// Read and print characters
// one by one
System.out.println(
    "Char : "
    + (char)buffReader.read());
System.out.println(
    "Char : "
```

```
    + (char)buffReader.read());
System.out.println(
    "Char : "
    + (char)buffReader.read());
System.out.println(
    "Char : "
    + (char)buffReader.read());

// Mark is set on the stream
buffReader.mark(0);

System.out.println(
    "Char : "
    + (char)buffReader.read());

// Reset() is invoked
buffReader.reset();

// read and print characters
```

```
        System.out.println(
            "Char : "
            + (char)buffReader.read());
        System.out.println(
            "Char : "
            + (char)buffReader.read());
        System.out.println(
            "Char : "
            + (char)buffReader.read());
        System.out.println(
            "Char : "
            + (char)buffReader.read());
    }
}
```

5.

```
import java.io.*;
public class GFG {
    public static void main(String[] args)
        throws IOException
```

```
{
    // Read stream file 'demo.txt'
    // containing text "GEEKSFORGEEKS"
    FileReader fileReader
        = new FileReader(
            "c:/demo.txt");
    // Convert fileReader to
    // bufferedReader
    BufferedReader buffReader
        = new BufferedReader(
            fileReader);
    // Call read() method
    while (buffReader.ready()) {
        System.out.print(
            (char)buffReader.read());
    }
    // Call close() method
    buffReader.close();
}
```

```
}
```

6.

```
import java.io.*;


public class GFG {
    public static void main(String[] args)
    {
        // Read the stream 'demo.txt'
        // containing text
        // "GEEKS"
        // "FOR"
        // "GEEKS"
        FileReader fileReader
            = new FileReader(
                "c:/demo.txt");
        // Convert fileReader to
        // bufferedReader
        BufferedReader buffReader
            = new BufferedReader(
                fileReader);
```

```
        while (buffReader.ready()) {
            System.out.println(
                buffReader.readLine());
        }
    }
}
```

7.

```
import java.io.*;

public class GFG {
    public static void main(String[] args)
    {

        // Read the stream 'demo.txt'
        // containing text
        // "GEEKSFORGEEKS"
        // "geeksforgeeks"
        FileReader fileReader
            = new FileReader(
```

```
            "c:/demo.txt");

        // Convert fileReader to
        // bufferedReader
        BufferedReader buffReader
            = new BufferedReader(
                fileReader);

        while (buffReader.ready()) {
            System.out.println(
                buffReader.readLine());
        }
    }
}
```

8.

```
import java.io.*;
import java.util.*;
class GFG {
    public static void main(String[] args)
```

```
{
    try {
        char[] str = { 'G', 'e', 'e', 'k', 's',
                       'F', 'o', 'r',
                       'G', 'e', 'e', 'k', 's' };

        // Create a CharArrayReader instance
        CharArrayReader reader
            = new CharArrayReader(str);
        // Get the character array
        // to be read from the stream
        char[] charArray
            = new char[13];
        // Read the charArray
        // to this reader using read() method
        // This will put the str in the stream
        // till it is read by the reader
        reader.read(charArray);
        // Print the read charArray
```

```
            System.out.println(
                Arrays
                    .toString(charArray));


            reader.close();
        }
        catch (Exception e) {
            System.out.println(e);
        }
    }
}
```

9.

```
import java.io.*;
import java.util.*;
class GFG {
    public static void main(String[] args)
    {
        try {
```

```
char[] str = { 'G', 'e', 'e', 'k', 's',
               'F', 'o', 'r',
               'G', 'e', 'e', 'k', 's' };
// Create a CharArrayReader instance
CharArrayReader reader
    = new CharArrayReader(str);
// Get the character array
// to be read from the stream
char[] charArray = new char[5];
// Read the charArray
// to this reader using read() method
// This will put the str in the stream
// till it is read by the reader
reader.read(charArray);
// Print the read charArray
System.out.println(
    Arrays
        .toString(charArray));
reader.close();
```

```
        }
        catch (Exception e) {
            System.out.println(e);
        }
    }
}
```

10.

```
import java.io.*;
import java.util.*;

class GFG {
    public static void main(String[] args)
    {

        try {

            char[] str = { 'G', 'e', 'e', 'k', 's',
                           'F', 'o', 'r',
```

```
                'G', 'e', 'e', 'k', 's' };

// Create a CharArrayReader instance
CharArrayReader reader
    = new CharArrayReader(str);

// Get the character array
// to be read from the stream
char[] charArray
    = new char[13];

// Get the offset index
int offset = 0;

// Get the length
int length = 13;

// Read the charArray
// to this reader using read() method
```

```
            // This will put the str in the stream
            // till it is read by the reader
            reader.read(charArray, offset, length);

            // Print the read charArray
            System.out.println(
                Arrays.toString(charArray));

            reader.close();
        }
        catch (Exception e) {
            System.out.println(e);
        }
    }
}
```

5. จงเขียน 10 โปรแกรม ประกอบด้วยเรื่อง substring / % max min avg tot พร้อมแสดงผลลัพธ์

1.
```
public class JavaExample {
    public static void main(String[] args) {
        double[] arr = {19, 12.89, 16.5, 200, 13.7};
        double total = 0;

        for(int i=0; i<arr.length; i++){
         total = total + arr[i];
        }
        double average = total / arr.length;
        System.out.format("The average is: %.3f", average);
    }
}
```

2.
```
import java.util.Scanner;
public class JavaExample {
    public static void main(String[] args) {
        System.out.println("How many numbers you want to enter?");
```

```
        Scanner scanner = new Scanner(System.in);
        int n = scanner.nextInt();
        double[] arr = new double[n];
        double total = 0;
        for(int i=0; i<arr.length; i++){
         System.out.print("Enter Element No."+(i+1)+": ");
         arr[i] = scanner.nextDouble();
        }
        scanner.close();
        for(int i=0; i<arr.length; i++){
         total = total + arr[i];
        }
        double average = total / arr.length;
        System.out.format("The average is: %.3f", average);
    }
}
```

3.

```
import java.util.Scanner;
```

```
public class Exercise12
 public static void main(String[] args) {
  Scanner in = new Scanner(System.in);
  System.out.print("Input first number: ");
  int num1 = in.nextInt();
  System.out.print("Input second number: ");
  int num2 = in.nextInt();
  System.out.print("Input third number: ");
  int num3 = in.nextInt();
  System.out.print("Input fourth number: ");
  int num4 = in.nextInt();
  System.out.print("Enter fifth number: ");
  int num5 = in.nextInt();
  System.out.println("Average of five numbers is: " +
   (num1 + num2 + num3 + num4 + num5) / 5);
 }
}
```

4.

```
import java.util.Scanner;
```

```
public class Main {
 public static void main(String[] args) {
  double num = 0;
  double x = 1;
  Scanner sc = new Scanner(System.in);
  System.out.println("Input the number(n) you want to calculate the average: ");
  int n = sc.nextInt();
  while (x <= n) {
   System.out.println("Input number " + "("+ (int) x +")" + ":");
   num += sc.nextInt();
   x += 1;
  }
  double avgn = (num / n);
  System.out.println("Average:" + avgn);
 }
}
```

5.

```
import java.lang.*;
```

```
public class StringDemo {

public static void main(String[] args) {

String str = "This is tutorials point";

String substr = "";


// prints the substring after index 8 till index 17

substr = str.substring(8, 17);

System.out.println("substring = " + substr);


// prints the substring after index 0 till index 8

substr = str.substring(0, 8);

System.out.println("substring = " + substr);

}

}
```

6.

```
public class Gfg {

    public static void main(String args[])

    {

        int a = -25;
```

```
        int b = -23;
        // prints the maximum of two numbers
        System.out.println(Math.max(a, b));
    }
}
```

7.

```
public class Gfg {
    public static void main(String args[])
    {
        int a = 23;
        int b = -23;
        // prints the maximum of two numbers
        System.out.println(Math.max(a, b));
    }
}
```

8.

```
public class Gfg {
    public static void main(String args[])
    {
```

```
        double a = 12.123;
        double b = 12.456;
        // prints the maximum of two numbers
        System.out.println(Math.max(a, b));
    }
}
```

9.

```
public class Gfg {
    public static void main(String args[])
    {
        int a = -25;
        int b = -23;
        // prints the minimum of two numbers
        System.out.println(Math.min(a, b));
    }
}
```

10.

```
public class Gfg {
```

```
    public static void main(String args[])
    {
        int a = 23;
        int b = -23;
        // prints the minimum of two numbers
        System.out.println(Math.min(a, b));
    }
}
```