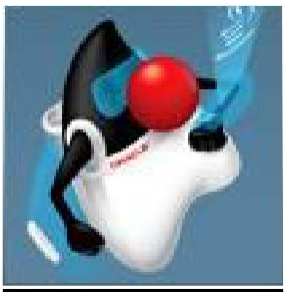

OCA 3: Assignments

Exercises

Q1 – JAT3Ex1

The following question tests your understanding of declaring primitive variables, assigning values and casting. Carefully review the following class. Identify which lines of the program contain compiler errors. Use a pen and paper to record your answers.

Now, to prove that you are correct, create the program using your favourite text editor / IDE.

Create a class named **JAT3Ex1**.

public class JAT3Ex1{	Line 1
public static void main (String[] args){	Line 2
int a = 5;	Line 3
int b = 0B101;	Line 4
int c = 0b101;	Line 5
int d = 05;	Line 6
int e = 0x0005;	Line 7
int f = 0xcafe;	Line 8
int g = 0XCAFE;	Line 9
int h = 7_000_000;	Line 11
int i = _7_000;	Line 12
int j = 7_000_;	Line 13
double k = 955_456_.45;	Line 14
double l = 955_456._45;	Line 15
long m = 1L;	Line 16
long n = 1l;	Line 17
float o = 45.56;	Line 19
float p = 45.56D;	Line 20
boolean q = true;	Line 21
boolean r = 1;	Line 22
char s = 's';	Line 23
char t = 1;	Line 24
byte u = (byte) n;	Line 25
byte v = (int) 127;	Line 26
byte w = 127;	Line 27
byte x = 128;	Line 28
byte y = (byte) 128;	Line 29
byte z = -10;	Line 30
}	
}	

Q2 – JAT3Ex2

The following question again tests your understanding of declaring primitive variables, assigning values and casting. As before, identify which lines of the program contain compiler errors. Use a pen and paper to record your answers.

Now, to prove that you are correct, create the program using your favourite text editor / IDE.

Create a class named **JAT3Ex2**.

public class JAT3Ex2{	Line 1
public static void main (String[] args){	Line 3
byte a = 127;	Line 4
byte b = 128;	Line 5
byte c = (byte) 127;	Line 6
byte d = 25;	Line 8
byte e = 26;	Line 9
byte f = d + e;	Line 10
byte g = (byte) d + e;	Line 12
byte h = (byte) (d + e);	Line 13
short i = (short) 34;	Line 14
short j = ((byte) 5 * (short) 15);	Line 16
short k = (short)((byte) 5 * (short) 15);	Line 17
short l = (5 * 15);	Line 18
int m,n,o=1, p=o++;	Line 20
int q,r,s=--r;	Line 21
double t;	Line 23
int u = 10;	Line 24
t = u;	Line 25
double v;	Line 27
int w = v;	Line 28
byte x = 44;	Line 30
x = x + 17;	Line 31
x += 7;	Line 32
short y = 20000;	Line 34
y = y * 3;	Line 35
y *= 7;	Line 36
int z = --5;	Line 38
}	
}	

Please Turn Over

Q3 – JAT3Ex3

In this question, your understanding of testing primitive and object reference variables for equality is examined.

Carefully examine the following classes. Use a pen and paper to note what you believe to be the program outputs.

Now, to prove that you are correct, create the program using your favourite text editor / IDE.

Create a folder named **JAT3Ex3**.

Finally, answer the following questions:

- At which line in class JAT3Ex3, does the SuperDuper object (referenced by the object reference variable ***sd***), become eligible for garbage collection?
- At which line in class JAT3Ex3, does the SuperDuper object (referenced by the object reference variable ***ds***), become eligible for garbage collection?

```
public class SuperDuper{}
```

```
public class JAT3Ex3{                                          Line 1
  public static void main (String[] args){                     Line 2
    int a = 65;                                                Line 3
    int b = a;                                                 Line 4
    a = 3;                                                     Line 5
    System.out.println(a);                                     Line 6
    System.out.println(b);                                     Line 7
                                                               Line 8
    SuperDuper sd = new SuperDuper();                          Line 9
    SuperDuper ds = new SuperDuper();                          Line 10

    if(sd == ds){                                              Line 12
      System.out.println("Match");                            Line 13
    }else{                                                     Line 14
      System.out.println("No Match");                         Line 15
    }                                                          Line 16

    SuperDuper superDuper = new SuperDuper();                  Line 18
    sd = superDuper;                                           Line 19

    if(sd == superDuper){                                      Line 21
      System.out.println("Match");                            Line 22
    }else{                                                     Line 23
      System.out.println("No Match");                         Line 24
    }                                                          Line 25

    ds = superDuper;                                           Line 27

    if(sd == ds){                                              Line 29
      System.out.println("Match");                            Line 30
    }else{                                                     Line 31
      System.out.println("No Match");                         Line 32
    }                                                          Line 33

   System.out.println(sd == null);                             Line 35
   System.out.println(ds == null);                             Line 36
   System.out.println(superDuper == null);                     Line 37
  }                                                            Line 38
}                                                              Line 39
```

Q4 – JAT3Ex4

Carefully review the following class.

Make a note of what you believe to be the output of the program.

Are you correct? Create the program using your favourite text editor / IDE.

Create a folder named **JAT3Ex4** to store the class file.

```
public class JAT3Ex4{

  public static void main(String[] args){
    new JAT3Ex4().test1();
  }

  public void test1(){
    int x = 10;
    test2(x);
    System.out.println(x);
  }

  public void test2(int x){
    x++;
  }
}
```

Please Turn Over

Q5 – JAT3Ex5

Carefully review the following class.

Make a note of what you believe to be the output of the program.

Are you correct? Create the program using your favourite text editor / IDE.

Create a folder named **JAT3Ex5** to store the class files.

```
public class Player{
  private String name;

  public Player(String name){
   this.name = name;
  }

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

  public String getName(){
   return name;
  }
}
```

```
public class JAT3Ex5{

  public static void main(String[] args){
    Player p = new Player("John Henley");
    new JAT3Ex5().test(p);
    System.out.println(p.getName());
  }

  public void test(Player p){
    p.setName("Mike Henley");
  }
}
```

Please Turn Over

Q6 – JAT3Ex6

Carefully review the following class.

Make a note of what you believe to be the output of the program.

Are you correct? Create the program using your favourite text editor / IDE.

Create a folder named **JAT3Ex6** to store the class files.

```
public class Player{
  private String name;

  public Player(String name){
   this.name = name;
  }

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

  public String getName(){
   return name;
  }
}
```

```
public class JAT3Ex6{

  public static void main(String[] args){
    Player p = new Player("John Henley");
    new JAT3Ex6().test(p);
    System.out.println(p.getName());
  }

  public void test(Player p){
    p = new Player("Mike Henley");
  }
}
```

Please Turn Over

Q7 – JAT3Ex7

Carefully review the following class.

Make a note of what you believe to be the output of the program.

Are you correct? Create the program using your favourite text editor / IDE.

Create a folder named **JAT3Ex7** to store the class files.

```
public class Player{
  private String name;

  public Player(String name){
   this.name = name;
  }

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

  public String getName(){
   return name;
  }
}
```

```
public class JAT3Ex7{

  public static void main(String[] args){
    Player p = new Player("John Henley");
    p = new JAT3Ex7().test(p);
    System.out.println(p.getName());
  }

  public Player test(Player p){
   return p = new Player("Mike Henley");
  }
}
```

Please Turn Over

Q8 – JAT3Ex8

Carefully review the following class.

Make a note of what you believe to be the output of the program.

Are you correct? Create the program using your favourite text editor / IDE.

Create a folder named **JAT3Ex8** to store the class file.

```
public class JAT3Ex8{
  private byte b = 19;

  public static void main(String[] args){
   byte b = 13;
   JAT3Ex8 obj = new JAT3Ex8();
   obj.update(b);
   System.out.println(b);
  }

  public void update(byte b){
   this.b++;
   b--;
  }
}
```

Please Turn Over

Q9 – JAT3Ex9

Carefully review the following classes.

Make a note of what you believe to be the outputs from the program.

Are you correct? Create the program using your favourite text editor / IDE.

Create a folder named **JAT3Ex9** to store the class files.

```
public class Y{
 byte b = 10;
}
```

```
public class X{
 Y y;
}
```

```
public class JAT3Ex9{
  static Y y;
  static X x;

  public static void main(String[] args){
    Y y = new Y();
    X x = new X();
    x.y = new Y();

    x.y.b = 19;
    y.b = 66;

    System.out.println("Output 1: " + y.b);
    System.out.println("Output 2: " + x.y.b);

    new JAT3Ex9().test1(y,x);

    System.out.println("Output 3: " + y.b);
    System.out.println("Output 4: " + x.y.b);

    y = y;
    x = x;
    y.b++;
    System.out.println("Output 5: " + y.b);
    System.out.println("Output 6: " + x.y.b);
  }

  public void test1(Y y, X x){
   x.y = y;
   x.y.b = 124;
   y.b = 100;
  }
}
```

Please Turn Over

Q10 – JAT3Ex10

Carefully review the following class.

Create the program using your favourite text editor / IDE. On what line, will the object references a2, a3 and a4 be eligible for garbage collection (if eligible at all)?

Create a folder named **JAT3Ex10** to store the class file.

```
public class A{                                          // Line 1
  A a;                                                   // Line 2

 public static void main(String[] args){                 // Line 4
  A a2 = new A();                                        // Line 5
  A a3 = new A();                                        // Line 6
  A a4 = new A();                                        // Line 7

  a2.a = a3;                                             // Line 9
  a3.a = a4;                                             // Line 10
  a4.a = a2;                                             // Line 11

  a2 = null;                                             // Line 13
  a3 = null;                                             // Line 14
  a4 = null;                                             // Line 15
 }                                                       // Line 16

 // Carry on processing.                                 // Line 18
}                                                        // Line 19
```

END OF EXERCISES