

CSC 1351 The Twelve Hour Exam From Hell

Name: _____

1 Arrays (Ch. 6)

1.1

Does this code compile? If it does, what is its output?

```
import java.util.*;
public class L {
    int[] data;
    void append(int n) {
        int[] newData = new int[data.length+1];
        for(int i=0;i<data.length;i++)
            newData[i] = data[i];
        newData[data.length] = n;
        data = newData; }
    public static void main(String[] args) {
        L l = new L();
        l.append(3);
        System.out.println(Arrays.toString(l.data)); } }
```

1.2

Does this code compile? If it does, what is its output?

```
import java.util.*;
public class L {
    int[] data = new int[1];
    void append(int n) {
        int[] newData = new int[data.length+1];
        for(int i=0;i<data.length;i++)
            newData[i] = data[i];
        newData[data.length] = n;
        data = newData; }
    public static void main(String[] args) {
        L l = new L();
        l.append(3);
        System.out.println(Arrays.toString(l.data)); } }
```

1.3

Does this code compile? If it does, what is its output?

```
import java.util.*;
public class L {
    int[] data = new int[0];
    void append(int n) {
        int[] newData = new int[data.length+10];
        for(int i=0;i<data.length;i++)
            newData[i] = data[i];
        newData[data.length] = n;
        data = newData; }
```

```

public static void main(String[] args) {
    L l = new L();
    l.append(3);
    System.out.println(Arrays.toString(l.data)); } }

```

1.4

Does this code compile? If it does, what is its output?

```

public class Sum {
    int[] data = new int[]{1,5,3,9,2,4};
    public static void main(String[] args) {
        int sum = 0;
        for(int i=0;i<data.length-1;i++)
            sum += data[i];
        System.out.println("sum="+sum);
    }
}

```

1.5

Does this code compile? If it does, what is its output?

```

public class Sum {
    public static void main(String[] args) {
        int[] data = new int[]{1,5,3,9,2,4};
        int sum = 0;
        for(int i=0;i<data.length-1;i++)
            sum += data[i];
        System.out.println("sum="+sum);
    }
}

```

1.6

What could go wrong with this code? Compute all primes.

```

static List<Integer> primesLessThanN(int n) {
    List<Integer> primes = new ArrayList<>();
    primes.add(2);
    for(int i=3;i<n;i+=2) {
        boolean isPrime = true;
        for(Integer p : primes) {
            if(i % p == 0) {
                isPrime = false;
                break;
            }
        }
        if(isPrime)

```

```
        primes.add(i);
    }
    return primes;
}
```

1.7

Write a program to compute an List of Integers containing all the digits in an integer N.

1.8

Rerite the above program using arrays.

1.9

Does this code compile? If so what is its output?

```
import java.util.*;
public class Buf {
    int[] data;
    public Buf(int n) { data = new int[n]; }
    int pos = 0;
    public void push(int v) { data[pos++ % data.length] = v; }
    public String toString() { return Arrays.toString(data); }
    public static void main(String[] args) {
        Buf b = new Buf(3);
        for(int i=0;i<10;i++) b.push(i);
        System.out.println("b="+b);
    }
}
```

1.10

Does this code compile? If so what is its output?

```
import java.util.*;
public class Sq {
    public static void main(String[] args) {
        List<Integer> li = new ArrayList<>();
        for(int i=0;i<3;i++)
            for(int j=0;j<=i;j++)
                li.add(j+1);
        System.out.println(li);
    }
}
```

1.11

Does this code compile? If so what is its output?

```
import java.util.*;
public class Sq {
    public static void main(String[] args) {
        List<Integer> li = new ArrayList<>();
        for(int i=0;i<3;i++)
            for(int j=i;j>=0;j--)
                li.add(j*j);
        System.out.println(li);
    }
}
```

1.12

Does this code compile? If so what is its output?

```
import java.util.*;
public class Sq {
    public static void main(String[] args) {
        String[] s = new String[]{"a","b","c","d"};
        String b = new String("b");
        for(int i=0;i<s.length;i++)
            if(s[i] == b) System.out.print("-B-");
            else System.out.print(s[i]);
        System.out.println();
    }
}
```

1.13

Does this code compile? If so what is its output?

```
import java.util.*;
public class Sq {
    public static void main(String[] args) {
        String[] s = new String[]{"a","b","c","d"};
        String b = new String("b");
        for(int i=0;i<s.length;i++)
            if(s[i].equals(b)) System.out.print("-B-");
            else System.out.print(s[i]);
        System.out.println();
    }
}
```

```
}  
}
```

1.14

Create a function named `lsq` that takes an argument `n`. The function should return an array of type `int` containing all the squares that are less than or equal to `n`. Thus, `lsq(25)` should return `[1,4,16,25]`.

2 Classes and Inheritance (Ch. 8/9)

2.1

Does this code compile? If it does, what is its output?

```
class A {  
    public void foo() { System.out.println("Hello_A"); }  
}  
public class B extends A {  
    public void foo() { System.out.println("Hello_B"); }  
    public static void main(String[] args) {  
        A a = new B();  
        a.foo();  
    }  
}
```

2.2

Does this code compile? If it does, what is its output?

```
class A {  
    public void foo() { System.out.println("Hello_A"); }  
}  
public class B implements A {  
    public void foo() { System.out.println("Hello_B"); }  
    public static void main(String[] args) {  
        A a = new B();  
        a.foo();  
    }  
}
```

2.3

Does this code compile? If it does, what is its output?

```
class A {
    public void foo() { System.out.println("Hello_A"); }
}
public class B extends A {
    private void foo() { System.out.println("Hello_B"); }
    public static void main(String[] args) {
        A a = new B();
        a.foo();
    }
}
```

2.4

Does this code compile? If it does, what is its output?

```
interface A {
    public void foo() { System.out.println("Hello_A"); }
}
public class B implements A {
    public void foo() { System.out.println("Hello_B"); }
    public static void main(String[] args) {
        A a = new B();
        a.foo();
    }
}
```

2.5

Does this code compile? If it does, what is its output?

```
interface A {
    public void foo();
}
public class B implements A {
    public void foo() { System.out.println("Hello_B"); }
    public static void main(String[] args) {
        A a = new B();
        a.foo();
    }
}
```

2.6

Does this code compile? If it does, what is its output?

```
public class B {
    static int a;
    int b;
    public String toString() { return ("+a+", "+b+"); }
    public static void main(String[] args) {
        B b = new B();
        b.a = 1; b.b = 2;
        B c = new B();
        c.a = 3; c.b = 4;
        System.out.println(b+" "+c);
    }
}
```

2.7

Does this code compile? If it does, what is its output?

```
class A {
    static void foo() { System.out.println("Hello_A"); }
}
public class B extends A {
    static void foo() { System.out.println("Hello_B"); }
    public static void main(String[] args) {
        A a = new A();
        a.foo();
    }
}
```

2.8

Does this code compile? If it does, what is its output?

```
class A { }
public class B extends A {
    public static void main(String[] args) {
        A a = new B();
        System.out.println("works");
    }
}
```

2.9

Does this code compile? If it does, what is its output?

```
class A { }
public class B extends A {
    public static void main(String[] args) {
        B a = new A();
        System.out.println("works");
    }
}
```

2.10

Does this code compile? If it does, what is its output?

```
class A { }
public class B extends A {
    public static void main(String[] args) {
        B a = (B)new A();
        System.out.println("works");
    }
}
```

2.11

Does this code compile? If it does, what is its output?

```
class A { }
public class B extends A {
    public static void main(String[] args) {
        A a = new B();
        B b = (B)a;
        System.out.println("works");
    }
}
```

2.12

Does this code compile? If it does, what is its output?

```
class A {
    int val1() { return 3; }
    int val2() { return 4; }
}
public class B extends A {
    int val1() { return 5; }
    public static void main(String[] args) {
        A a1 = new B();
        A a2 = new A();
        System.out.println("Num="+a1.val1()*a2.val2());
    }
}
```

2.13

Does this code compile? If it does, what is its output?

```
class A {
    boolean isSuper() { return true; }
    void show() {
        if(isSuper()) System.out.println("Super!");
        else System.out.println("Not super.");
    }
}
```



```

public class B extends A {
    boolean isSuper() { return false; }
    public static void main(String[] args) {
        A a = new A();
        a.show();
        a = new B();
        a.show();
    } }

```

2.14

Does this code compile? If it does, what is its output?

```

class A {
    boolean isSuper() { return true; }
}
public class B extends A {
    boolean isSuper() { return false; }
    public static void main(String[] args) {
        A a1 = new A();
        A a2 = new B();
        B b = null;
        if(!a1.isSuper()) b = (B)a1;
        if(!a2.isSuper()) b = (B)a2;
        System.out.println("Found␣B");
    } }

```

2.15

Does this code compile? If it does, what is its output?

```

class A {
    boolean isSuper() { return true; }
}
public class B extends A {
    boolean isSuper() { return false; }
    public static void main(String[] args) {
        A a1 = new A();
        A a2 = new B();
        B b = null;
        if(a1.isSuper()) b = (B)a1;
        if(a2.isSuper()) b = (B)a2;
        System.out.println("Found␣B");
    } }

```

2.16

Does this code compile? If it does, what is its output?

```

class A { }
public class B extends A {
    public static void main(String[] args) {
        A a1 = new A();
        A a2 = new B();
        B b = null;
        if(a1 instanceof B) b = (B)a1;
    } }

```

```
    if(a2 instanceof B) b = (B)a2;
    System.out.println("Found B");
} }
```

3 Anonymous Inner Classes (Covered with Ch. 8/9)

The java.lang package has a class called Runnable.

```
package java.lang;
public interface Runnable {
    public void run();
}
```

3.1

Write a complete “Hello, World” program in Java that instantiates an anonymous inner class based on the Runnable interface, then calls the instantiated object to print the message.

3.2

Rewrite the following code to make use of an anonymous inner class

```
class MyAdapter extends MouseAdapter {
    public void mousePressed(MouseEvent me) {
        System.out.println("Press"); } }
...
public class MyApp {
    public static void main(String[] args) {
        JFrame bf = new JFrame("MyApp");
        bf.addMouseListener(new MyAdapter());
    }
}
```