CSE1322 Test 3 Practice Test

Test 3 will cover modules 1-9 (it is cumulative). The questions in the test will present multiple choice answers. You can make up your own possible answers below:

Question 1:
What is the output of the following code:

```
  int i=2;
  int y=10;
  while(i<15) {
    i+=2;
    y+=i;
  }
  Println(y);
}
```

Question 2:
What is the output of the following code?

```
//Java:
   boolean happy=true;
   int z=7;

   for(int i=0;i<5;i++) {
     if(i%2==0) {
        happy=!happy;
     }
     z+=1;
   }

   if((z>13) && (happy)) {
     System.out.println("Yes!");
   }
   else {
     System.out.println("No!");
   }
 }


//C#:
   bool happy=true;
   int z=7;

   for(int i=0;i<5;i++) {
     if(i%2==0) {
        happy=!happy;
     }
     z+=1;
   }

   if((z>13) && (happy)) {
     Console.WriteLine("Yes!");
   }
   else {
     Console.WriteLine("No!");
   }
 }
```

Question 3:
How do you write an overloaded constructor? What is it used for?

Question 4:
Why do we use encapsulation? What are getters and setters?

Question 5:
After this code runs, what does myStuff look like?

```
int[][] myStuff = new int[5][5];

for(int i=0;i<5;i++) {
  myStuff[2][i]+=i;
}
```

Question 6:
What is the output of this code:

```
class JustNumber {
  public char x='c';
}

class Main {
  public static void changeX(char x) {
    x++;
  }

  public static void changeJustNum(JustNumber x) {
    x.x++;
  }

  public static void main(String[] args) {
    char x='a';
    changeX(x);
    Println("X is "+x);

    JustNumber a=new JustNumber();
    changeJustNum(a);
    Println("Other x is "+a.x);
  }
}
```

Question 7:
What is the output of the following code:

Java	C#

class Main {
  public static int a(int x) {
  return 2;
  }
 	
  public static int a(char x) {
  if(x=='a') {
  return 8;
  }
  else {
  return 9;
  }
  }
 	
  public static void main(String[] args) {
  int answer=a(3)+a('b');
  System.out.println(answer);
  }
}
	using System;
	
	class Program {
	  public static int a(int x) {
	  return 2;
	  }
	
	  public static int a(char x) {
	  if(x=='a') {
	  return 8;
	  }
	  else {
	  return 9;
	  }
	  }
	
	  public static void Main (string[] args) {
	  int answer=a(3)+a('b');
	  Console.WriteLine(answer);
	  }
	}

Question 8:
Given the following code:

```
class X {
  private int a=7;

  protected int getA() {
    return a;
  }

  public void setA(int a) {
    this.a=a;
  }
}
```

Which lines in the following code will cause compile errors:

Java	C#

class Y extends X {
  public void b() {
  a++; //Line 1
  setA(9); //Line 2
  }
}
 	
class Main {
  public static void main(String[] args) {
  X myX=new X();
  Y myY=new Y();
 	
  myX.a=10; //Line 3
  myX.setA(10); //Line 4
  myY.a=11; //Line 5
  myY.setA(12); //Line 6
  myY.b(); //Line 7
  }
}
	class Y : X {
	  public void b() {
	  a++; //Line 1
	  setA(9); //Line 2
	  }
	}
	
	class Program {
	  public static void Main (string[] args) {
	  X myX=new X();
	  Y myY=new Y();
	
	  myX.a=10; //Line 3
	  myX.setA(10); //Line 4
	  myY.a=11; //Line 5
	  myY.setA(12); //Line 6
	  myY.b(); //Line 7
	  }
	}

Question 9:
What is the name of the parent class for class X?

```
class X {
  private int a=7;

  public void setA(int a) {
    this.a=a;
  }
}
```

Question 10:
Is the following valid?

```
abstract class X {
  public int methodA() {
    return 3;
  }

  public abstract int methodB() {};
}
```

Question 11:
What is the difference between an overloaded method and an overridden method?

Question 12:
What does the following code output:

```
class oneClass {
  public int x;

  public oneClass() {
    x=5;
  }

  public char x() {
    return 'A';
  }
}

class Main {
  public static void main(String[] args) {
    int x=2;
    OneClass y = new OneClass();

    print(x);
    print(y.x);
    print(y.x());
  }
}
```

Question 13:
What is the output of the following code?

Java	C#

class X {
  private int a;
 	
  public X(int b) {
  a=b;
  }
 	
  public X(char c) {
  a=10;
  }
 	
  @Override
  public String toString() {
  return "a is "+a;
  }
}
 	
class Y extends X {
  public Y(int c) {
  super('x');
  }
 	
  public Y() {
  super(3);
  }
}
 	
class Main {
  public static void main(String[] args) {
  Y myY=new Y(3);
  System.out.println(myY);
  }
}
	using System;
	
	class X {
	  private int a;
	
	  public X(int b) {
	  a=b;
	  }
	
	  public X(char c) {
	  a=10;
	  }
	
	  public override string ToString() {
	  return "a is "+a;
	  }
	}
	
	class Y : X {
	  public Y(int c) : base('x') {
	  }
	
	  public Y() : base(3) {
	  }
	}
	
	class Program {
	  public static void Main (string[] args) {
	  Y myY=new Y(3);
	  Console.WriteLine(myY);
	
	  }
	}

Question 14:
What is the output of the following code?

Java	C#

class Main {
  public static int a(int myNum){
  if (myNum < 1) {
  return 4;
  }
  else {
  return myNum + a(myNum-3);
  }
  }
 	
  public static void main(String[] args) {
  System.out.println(a(5));
  }
}
	using System;
	
	class Program {
	  public static int a(int myNum){
	  if (myNum < 1) {
	  return 4;
	  }
	  else {
	  return myNum + a(myNum-3);
	  }
	  }
	
	  public static void Main (string[] args) {
	  Console.WriteLine(a(5));
	  }
	}

Question 15:
What line is missing from this code to make a recursive method that prints out every 5th number up to a max number passed in?

```
 public static void printNumbers(int max) {
   if(max>0) {
     //What line is missing here?
     Println(max);
   }
 }
```

Question 16:
What is the output of the following code?

Java	C#

class Main {
  public static void do_stuff() {
  int[] myNums = new int[10];
  for(int i=0;i<=10;i++) {
  myNums[i]=i;
  }
  }
 	
  public static void main(String[] args) {
  try {
  do_stuff();
  System.out.println("A");
  }
  catch(Exception e) {
  System.out.println("B");
  }
  }
}
	using System;
	
	class Program {
	  public static void do_stuff() {
	  int[] myNums = new int[10];
	  for(int i=0;i<=10;i++) {
	  myNums[i]=i;
	  }
	  }
	
	  public static void Main (string[] args) {
	  try {
	  do_stuff();
	  Console.WriteLine("A");
	  }
	  catch(Exception e) {
	  Console.WriteLine("B");
	  }
	  }
	}

Question 17:
Given the following code:

Java	C#

class Main {
  public static void do_stuff(int x) throws Exception {
  int[] myArray=new int[10];
  if(x<0) {
  throw new Exception("X<0");
  }
  else {
  for(int i=0;i<=x;i++) {
  myArray[i]=i+x;
  }
  }
  System.out.println(myArray[x]);
  }
 	
  public static void main(String[] args) {
  try {
  do_stuff(-1); //Line 1
  do_stuff(9); //Line 2
  do_stuff(10); //Line 3
  }
  catch(IndexOutOfBoundsException e) {
  System.out.println("Error 1");
  }
  catch(Exception e) {
  System.out.println("Error 2");
  }
  }
}
	using System;
	
	class Program {
	  public static void do_stuff(int x) {
	  int[] myArray=new int[10];
	  if(x<0) {
	  throw new Exception("X<0");
	  }
	  else {
	  for(int i=0;i<=x;i++) {
	  myArray[i]=i+x;
	  }
	  }
	  Console.WriteLine(myArray[x]);
	  }
	
	  public static void Main (string[] args) {
	  try {
	  do_stuff(-1); //Line 1
	  do_stuff(9); //Line 2
	  do_stuff(10); //Line 3
	  }
	  catch(IndexOutOfRangeException e) {
	  Console.WriteLine("Error 1");
	  }
	  catch(Exception e) {
	  Console.WriteLine("Error 2");
	  }
	  }
	}

What is the output of the code?

Question 18:
If you comment out Line 1 in the previous code, then what is the output of that code?

Question 19:
What is the content of a.txt after the following code executes?

Java	C#

import java.io.*;
 	
class Main {
  public static void write_file(String filename, String line, int x) {
  try {
  File myFile=new File(filename);
  PrintWriter theFile = new PrintWriter(myFile);
  for(int i=0;i<x;i++) {
  for(int j=0;j<x;j++) {
  theFile.print(line+" ");
  }
  theFile.println();
  }
  theFile.close();
  }
  catch(IOException e) {
  System.out.println("Error writing file: "+e.getMessage());
  }
  }
 	
  public static void main(String[] args) {
  write_file("A.txt","Test",4);
  }
}
	using System;
	using System.IO;
	
	class Program {
	  public static void write_file(String filename, String line, int x) {
	  try {
	  StreamWriter theFile = new StreamWriter(filename);
	  for(int i=0;i<x;i++) {
	  for(int j=0;j<x;j++) {
	  theFile.Write(line+" ");
	  }
	  theFile.WriteLine();
	  }
	  theFile.Close();
	  }
	  catch(IOException e) {
	  Console.WriteLine("Error writing file: "+e.Message);
	  }
	  }
	
	  public static void Main (string[] args) {
	  write_file("A.txt","Test",4);
	  }
	}

Question 20:
What line is missing below, if this code is to read a file A.txt and print it to the screen?

Java	C#

import java.io.*;
import java.util.Scanner;
 	
class Main {
  public static void readFile(String fn) {
  try {
  File myFile=new File(fn);
  Scanner myScan=new Scanner(myFile);
  while(//WHATS MISSING HERE??) {
  String line=myScan.nextLine();
  System.out.println(line);
  }
  }
  catch(Exception e) {
  System.out.println("Error");
  }
  }
 	
  public static void main(String[] args) {
  readFile("A.txt");
  }
}
	using System;
	using System.IO;
	
	class Program {
	  public static void readFile(string fn) {
	  try {
	  StreamReader myScan=new StreamReader(fn);
	  while(//WHATS MISSING HERE??) {
	  string line=myScan.ReadLine();
	  Console.WriteLine(line);
	  }
	  }
	  catch(Exception e) {
	  Console.WriteLine("Error");
	  }
	  }
	
	  public static void Main (string[] args) {
	  readFile("A.txt");
	  }
	}

Question 21:

Java	C#

class DoStuff implements Runnable {
  public void run() {
  System.out.println("Running");
  }
}
 	
class Main {
  public static void main(String[] args) {
  DoStuff myStuff=new DoStuff();
  Thread x = new Thread(myStuff);
  //What's missing here?
  }
}
	using System;
	using System.Threading;
	
	class DoStuff {
	  public void run() {
	  Console.WriteLine("Running");
	  }
	}
	
	class Program {
	  public static void Main (string[] args) {
	  DoStuff myStuff=new DoStuff();
	  ThreadStart myTS=new
	ThreadStart(myStuff.run);
	  Thread x=new Thread(myTS);
	  //What's missing here?
	  }
	}

How do you correctly start the thread x?

Question 22:
What is the difference between an interface and an abstract class?

Question 23:
What does this return:

```
class Main {
  public static void main(String[] args) {
    float y=54.2f;
    char x = (char)y;

    Print(x);

  }
}
```

Question 24:
Where is 0,0 in a graphical window?

Question 25:

What color is represented by 0000FF?

Question 26:
When does an event happen in a GUI?

Question 27:
What is the advantage of a linked list over an ArrayList/List?

Question 28a:
True/False:
It will take the same amount of time to find a random item in an array, as it will a linked list?

Question 28b:
What if both the array and linked list are sorted. Does that change the answer?

Question 28c:
Is it faster to get an item out of a BST or a sorted array?

Question 28d:
Which is faster to insert into:
a) Unsorted Array
b) Sorted Array
c) Unsorted Linked List
d) Sorted Linked List
e) BST

Question 29:
Given the following linked list:

What is the value of head.next.next.data?