CS1620 – SPRING 2000 – MIDTERM EXAM

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Exercise 1 (6 pts)

Identify all errors of the following program :

```
//
   Draw 4 java cups
//

/* <APPLET CODE=cups.class WIDTH=400 HEIGHT=280>
</APPLET>
*/

import java.applet.*;
import java.awt.*;
import java.awt.event.*;
int h;

public class bugs 20 extends applet { private Graphics g;

         void drawcup(int x, y,int width,int height) { int r=h/3;

           // Draw the bottom of the cup

                g.setColor(cyan);

                g.fillOval(x,y+height,width,2*r);

                g.setColor(black);

                drawOval(x,y+height,width,2*r);
        }

        public void paint(Graphic gr) {g=gr;int w=350, h20=10, x=20, 2y=70;

                 for (int c==5,c<9,c+=) {

                        int hCup=h20/c;

                        gr.drawcup(x,2y hCup,w/c,hCup);

                        x+=w/c; } }
```

Exercise 2 (5 pts)

Consider the following instantiable class :

```
class MyFirstClass
{
    public final int A=10;
    public int b;
    private int c;

    public int double2(int a)
    {
        return a+a;
    }

    private int power(int a)
    {
        return a * a;
    }
}
```

Identify invalid statements in the following main class. For each invalid statement, state why it is invalid.

```
class MyMainClass
{
    public static void main(String args[])
    {
        MyFirstClass obj1, obj2;
        obj1 = new MyFirstClass();
        obj2 = obj1;

        obj1.b = obj1.double2(2);
        obj2.A = obj1.b;
        obj2.b = obj1.power(2)+ obj1.double2(2);
        obj2.c = obj1.double2(3) ;
        obj2.b += obj1.A;
    }
}
```

Exercise 3 (6 pts)

Consider the following main class.

```
import javabook.*;
class CoffeeBiller1
{
   public static void main (String args[])
   {
      MainWindow mainWindow = new MainWindow("Coffee Biller Program");
      MessageBox message = new MessageBox(mainWindow);
      InputBox inputBox = new InputBox(mainWindow);
      OutputBox outputBox = new OutputBox(mainWindow);
      mainWindow.show();
         outputBox.show();
   }
```

1. Draw the corresponding Object Diagram Notation.
2. What will be the output from this program ?
3. Complete the program in order to display the input dialog box (inputBox).

Exercise 4 (9 pts)

Show a state of memory diagram after each of the following statements is executed :

```
MyClass obj1, obj2;
int x=10, y;
obj1 = new Myclass();
obj2 = new Myclass();
Myclass obj3;
obj3 = obj1;
y = x;
x = y;
y += x;

while (y==x || y == 2*x)
   {
     x += y;
        obj2 = obj1;
   }
```

Exercise 5 (4 pts)

Are the following if statements equivalent ? justify your answer ?

- a)

```
if (a == b)
   if (b == c)
      if (c == d)
         a = 10;
      else
         b = 10;
```

- b)

```
if (a == b && b == c && c == d)
   a = 10;
else
   b = 10;
```