ICS4M FINAL EXAM

Student Name: _______________________  TOTAL MARKS: 180

Time: 2 ½ hrs

PART A (MULTIPLE CHOICE 7 marks)

1. What is the result of evaluating the following expression? \((1/2 + 3.5) \times 2.0\)
   a) 8.0  
   b) 8  
   c) 7.0  
   d) 0

2. What assignment is correct
   a) char aChar=5;  
   b) char aChar ="w";  
   c) char aChar ="*";  
   d) a and c are correct

3. You use this method to specify the items to display in a Combo box.
   a) Add.Item  
   b) AddList  
   c) Items.Add  
   d) ItemDefine  
   e) ListAdd

4. Which one of the following are incorrect For instructions?
   a) for(int x=1;x<=3;x++)  
   b) for (int x=3;x<=1;x++)  
   c) for x=3 to 1 step -1  
   d) for (int x=100;x<=200;x+=10);  
   e) for x=75 to 100
PART B (SHORT ANSWER 79 MARKS)

1. What is a class? (2 marks)

2. Describe in detail the difference between a procedure type method and a function type method. (4 marks)

3. Take a careful look at the code below, the main structure has been omitted for convenience. Describe in detail what is occurring in the 4\textsuperscript{th} and 5\textsuperscript{th} lines of the code. (3 marks)

```java
int year;
boolean leap;

year=2008;
leap=year % 4 == 0;

if (leap) {
    MessageBox.Show("leap year");
} else {
    MessageBox.Show("not a leap year");
}
```

4. Provide a tolerance expression for each of the following problems

a) Assume you are performing calculations on a function defined as $y = 2x + 1$ for values $x = -10 \ldots 10$ (3 marks)

For $x^2 - 7x + 12$
5. public FrmGraphicsClassIntro2()
{
    InitializeComponent();
}

    Graphics g;

private void FrmGraphicsClassIntro2_Load(object sender, EventArgs e)
{
      
provide the one line of code that goes here so that graphic object g will be allowed to draw on a panel called panel1 (1 mark)

6. Design a method that will determine whether a number passed to it is even or odd. Eg. EvenOdd(15) should return the word ‘odd’ (3 marks)
18. Using Structures (recall the car images example and assignment this semester)

**Part A (4 marks)**
Provide a structure statement called Student with the properties of name, age, sex

**Part B (2 marks)**
Instantiate an array of Student called BunchOfStudents

**Part C (6 marks)**
Store through assignment statements all the information for two sample students.

BunchOfStudents[1]

BunchOfStudents[2]
PART C (PROGRAMMING 85 MARKS)

Problem 1 (45 marks)

The table below represents the quantities on hand at various warehouses of various items sold. Assume a data file already exists named "WarehouseData.Txt" which contains all the quantity numbers, item names and warehouse names. The last two columns Cost Price and Sell Price are also in the data file (just the numbers). Code one or more C# statements to perform the following operations on the data:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>COST PRICE</th>
<th>SELL PRICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHOVEL</td>
<td>50</td>
<td>500</td>
<td>0</td>
<td>225</td>
<td>1000</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>HAMMER</td>
<td>125</td>
<td>375</td>
<td>200</td>
<td>0</td>
<td>525</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>RAKE</td>
<td>75</td>
<td>225</td>
<td>150</td>
<td>425</td>
<td>610</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>PICKS</td>
<td>25</td>
<td>5</td>
<td>40</td>
<td>70</td>
<td>0</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>BARREL</td>
<td>10</td>
<td>0</td>
<td>50</td>
<td>30</td>
<td>40</td>
<td>25</td>
<td>75</td>
</tr>
</tbody>
</table>

1. Load all the arrays with the appropriate data (5 marks)
   a) Load the quantity numbers into a 2-d array called quantity
   b) Load the items and warehouse names into 1-d arrays called item and warehouse
   c) Load the cost and selling prices into 1-d arrays called cost and sell

2. Print out the table (don't include the cost price or selling price) (5 marks)

3. Printout a list of items and warehouse locations where the quantity on hand is less than 10 (5 marks)

4. Determine the total number of each item that Pro Hardware has. (Use an array counter) (5 marks)
Problem 2 (15 marks)

At a casino, the following game is played between a player and the banker. The player pays the banker $7.50. The banker has a roulette wheel with 36 numbers (1-36), which he spins. Assume the resulting number is 17. The banker then pays the player $1, and spins the wheel again. Suppose the number this time is 24. The banker pays another $1, and the process continues until a number is produced which has already occurred. Suppose the sequence of numbers is 17,24,18,31. The banker has paid the player $4.00. At the next turn of the wheel the number is 18 (a number already produced). At this point the game ends, and the player has lost $3.50. Simulate 200 such games, and display the numbers produced by the roulette wheel, the amount the player wins or loses each game, and the player's total loss or gain.