IT 1050 – Programming Logic

Final Examination

100 Points

Instructions:

Follow all **Three (3) Steps detailed in this document.*

****Bolded** items **must match code names exactly**.*

This means the **case of the names **must match**.*

Verify all your results by **DEBUGGING.*

**No Console Input/Output Needed.*

Step 1 – Create a class called "Passenger":

- Two private member variables:
  - **Name**, which is a string.
  - **Weight**, which is a double.
- One public constructor:
  - Takes two parameters: **name**, which is a string, and **weight**, which is a double.
  - Assigns **Name** the value of **name**.
  - Assigns **Weight** the value of **weight**.
- Two public methods:
  - **GetName**, which returns **Name**.
  - **GetWeight**, which returns **Weight**.

Step 2 – Create a class called "Elevator":

- Two private member variables:
  - **MaxWeight**, which is a double.
  - **Occupants**, which is an array of Passengers.
- One public constructor:
  - Takes two parameters: **maxOccupants**, which is an int, and **maxWeight**, which is a double.
  - Creates new memory for the **Occupants** array to be the size of **maxOccupants**.
  - Assigns **MaxWeight** the value of **maxWeight**.
- Three public methods:
  - **AddOccupant**
    - Takes two parameters: **passenger**, which is a Passenger, and **index**, which is an int.
    - Assigns **Occupants** at position **index** the value of **passenger**.
    - No return value. (void)
  - **GetCurrentWeight**, which returns the sum of the weights of all occupants in this Elevator.
  - **IsOverMaxCapacity**, which returns whether or not **GetCurrentWeight** is greater than **MaxWeight**.

Step 3 – In Your Main Program:

- Declare a local variable named **elevator1** which is an Elevator.
- Instantiate **elevator1**, with a **maxOccupants** of 2, and a **maxWeight** of 400.
- **AddOccupant** to **elevator1**, with a **name** of “A1”, **weight** of 180, and **index** of 0.
- **AddOccupant** to **elevator1**, with a **name** of “A2”, **weight** of 220, and **index** of 1.
- Declare a local variable named **elevator1IsOverMaxCapacity** which is a **bool**.
- Assign **elevator1IsOverMaxCapacity** the value of **IsOverMaxCapacity** for **elevator1**.
- Debug your program to make sure the value of **elevator1IsOverMaxCapacity** is **false**.

- Declare a local variable named **elevator2** which is an Elevator.
- Instantiate **elevator2**, with a **maxOccupants** of 3, and a **maxWeight** of 600.
- **AddOccupant** to **elevator2**, with a **name** of “A1”, **weight** of 200, and **index** of 0.
- **AddOccupant** to **elevator2**, with a **name** of “A2”, **weight** of 200, and **index** of 1.
- **AddOccupant** to **elevator2**, with a **name** of “A3”, **weight** of 201, and **index** of 2.
- Declare a local variable named **elevator2IsOverMaxCapacity** which is a **bool**.
- Assign **elevator2IsOverMaxCapacity** the value of **IsOverMaxCapacity** for **elevator2**.
- Debug your program to make sure the value of **elevator2IsOverMaxCapacity** is **true**.