Midterm Exam Questions

1. What documents are included into a RUP Phase *X* Report (where *X* is replaced by the current phase number)?
2. What does Moore's Law state?
3. What does RUP stand for?
4. List all of the data types that .NET supports?
5. List one thing that is not in the .NET Compact Framework.
6. _____is similar to an interface, but specifies just one signature for a single method.
   a. Delegate
   b. Driver
   c. Replicate
   d. Subscriber

7. _____ is the name of an ad-hoc Bluetooth network formed by a master and its slave(s).
   a. Mininet
   b. Micronet
   c. Nanonet
   d. Piconet
8. Define three of the five terms: IP Host Entry, IP Address, TCPListener, Socket and TCP Client. Include one coding example for one of the terms defined.
9. Define Bluetooth profile. Name and explain a few Bluetooth profiles.
10. What are the two essential elements of the platform for .NET and briefly one of the elements?
11. Provide an overview of C# and its features.
12. Below is code written in Java to handle exceptions. Write it in C# to handle the same exception.

Java Code:

```
try {
      foo ( );
} catch (IOException f){
}  catch (Exception e) { …}
 finally {
}
```

13. Explain the various memory management schemes and the pros and cons of each.
14. What is stream? Provide a sample code and define buffer, offset and count as it relates to stream.
15. What did Dr. Povinelli suggest was a good practice in I/O programming?
    a. surround code with a try/catch block
    b. write a record of all I/O executions to the system output stream
    c. leave it to the professionals
16. From the list below, which term is not specific to communication protocol?
    a. Socket
    b. TCP

c. Delegate
d. Port

17. Which statement below best describes a C# delegate?
    a. A C# delegate is any UN employee.
    b. A C# delegate is a type that references a method.
    c. A C# delegate is a cross-channel operation in most forms of communication protocol that represents an entity's availability to receive data.
    d. A C# delegate always requires operator overloading.
18. The C# substitution for Java's "import" keyword is:
    a. Extract
    b. Intermingle
    c. Using
    d. Utilizing
    e. Referencing
19. Which snippet of code is most appropriate for creating a Socket capable of TCP communication over Ethernet in C#?
    a. Socket cS = new Socket(AddressFamily.Tcp,SocketType.Stream,ProtocolType.Tcp);
    b. Socket cS = new Socket(AddressFamily.Tcp,SocketType.Stream,ProtocolType.Udp);
    c. Socket cS = new Socket(AddressFamily.InterNetwork,SocketType.Stream,ProtocolType.Icmp);
    e. Socket cS = new Socket(AddressFamily.InterNetwork,SocketType.Stream,ProtocolType.Tcp);
20. True or False: The .NET Compact framework is a subset of the standard .NET framework, but also contains additional library entities specific to mobile device platforms.
21. True or False: The time spent determining requirements of a project comes to an absolute stop after the first phase of the project is completed.
22. What is the relationship between unit cost and NRE cost? Describe when you would accept a higher NRE cost and when a lower NRE cost is more appropriate.
23. Describe the tradeoffs between designing a system with a general purpose processor, like an Intel chip, and designing a system with a single purpose processor.
24. What are the main restrictions in developing a GUI using the .NET Compact Framework?
25. What version of the OS is running on the iPAQ?
26. What are the three most common metrics for an embedded system?
27. What are the four phases of RUP?
28. What is the difference between a use case and a scenario?
29. List 5 examples of embedded systems.
30. List some common characteristics of embedded systems.
31. What is Moore's law?
32. What are some restrictions on the System.Windows.Forms Namespace in the .NET Compact Framework?
33. True of False: The .NET Framework supplies garbage collection.
34. What are the four phases of the RUP?
35. The RUP is a process made by whom?
36. Give three common characteristics of embedded computing systems and briefly describe each.
37. List five examples of embedded systems.
38. List five common design metrics of embedded systems.
39. C# on the .NET platform uses garbage collection to manage program memory.
40. List and define the three key technologies of embedded systems.
41. What are the features and benefits of general-purpose processors, single-purpose processors, and application-specific processors?

42. How are mobile devices different from PCs?
43. What are three characteristics of embedded systems?
44. What are 3 common design metrics for embedded systems?
45. What is Moore's Law?
46. Place the mobile computing devices in order of their release, starting with the earliest.
    a. ___ Radio Shack TRS-80 Model 100
    b. ___ Osborne 1
    c. ___ Compaq iPaq 3100
    d. ___ Apple's Newton MessagePad
    e. ___ Compaq Portable
47. What are the 4 phases of the RUP?
48. What are 7 examples of Embedded Systems?
49. Give a short explanation for the three key technologies for embedded systems.
50. Give four examples of embedded systems
51. What is "Moore's Law?"
52. What do the following stand for?
    a. RAD
    b. RUP?
53. What are the four phases of the RUP?
54. True or False: Personal Computers are the most common type of computer used today.
55. True or False: there are more embedded processors produced every year than desktop processors.
56. What does PAN stand for?
57. What is garbage collection and does c# support it?
58. How do mobile devices and PCs differ?
59. What is Moore's law?
60. True or False: C# employs the using keyword to import software packages
61. List several different kinds of processors:
62. Common embedded design metrics:
63. List 5 examples of embedded systems.
64. List two differences between embedded systems and mainstream PCs.
65. Embedded systems design is governed by two types of cost. What are they? Briefly explain.
66. There are three kind of IC technologies. Briefly describe one, and discuss its strengths and weaknesses relative to the other technologies.
67. Name three common embedded smart phone software platforms.
68. Give 5 typical applications of embedded processors.
69. Offer one reason why embedded systems are so prevalent in today's world, from a financial standpoint.
70. Offer one reason why embedded systems are so prevalent in today's world, from a technical standpoint.
71. Designing a computer system for an embedded application is much different than designing for a desktop environment. List three non-functional requirements which are extremely important for an embedded system which are not major concerns for a desktop environment. Justify your answers
72. There are currently billions of processors in existence. Approximately what percentage of these processors exist in an embedded applications? Explain how this number makes sense.
73. List 10 embedded system applications
74. Designing for embedded systems is an extremely competitive field. Draw a graph of the time it takes to get a product to market versus the amount of revenue you stand to make off o f the product. Explain your answer.

75. The Osborne 1 and the Compaq Portable were both mobile computers released in the early 1980s. Even though the Osborne 1 was much cheaper and lighter than the Compaq Portable, its company went bankrupt not long after the computers release due to one key difference between the two systems. What was that key difference and why does it matter to new computing systems?
76. Out of the following 10 Windows Forms objects; the .NET compact framework for embedded devices supports only 5 of them. Circle them.
    a. Label
    b. GroupBox
    c. CheckedListBox
    d. ComboBox
    e. RadioButton
    f. TextBox
    g. ToolTip
    h. LinkLabel
    i. ListBox
    j. RichTextBox
77. When designing an application for an embedded system using Microstoft's Compact .NET Framework, of what aid to you is the debugger?
78. True or False: By default, methods in C# are virtual.
79. Name 3 arrays that C# provides.
80. What is the difference between Unit cost and NRE cost?
81. Define time-to-market and give the average time-to-market constraint.
82. A product has an NRE cost of $2000 and a unit cost of $100. Suppose you want to produce 10 units of the product. Calculate the total cost and the cost per-product.
83. List the 3 key technologies for embedded systems.
84. List the benefits and drawbacks of PLDs.