**PRINT A HARD COPY OF THIS AND BRING IT TO CLASS ON OCT 31. PLEASE, DO NOT EMAIL IT.**

Choice (2 points each): Circle the letter or letters to complete a statement or answer a question. Note that some questions allow more than one choice.

1. Which of the items are traditionally considered components of an information system?
   1. Office building
   2. People
   3. Data
   4. Hardware
   5. ANSI Standards
2. Which are examples of .Net Assemblies?
   1. Database
   2. A file ending with .exe
   3. A file ending with .dll
   4. A flat text file for Powershell
3. Third normal form for a database requires
   1. All non-key columns depend on the primary key
   2. All non-key columns to depend on at least part of the primary key
   3. All primary keys to be a single column
   4. All non-key columns depend on the foreign key
4. In SQL Server, a schema is similar in concept to a
   1. Database table
   2. Namespace in .Net
   3. Query in SQL
   4. Relational algebra operator
5. One of the reasons .Net Assemblies were an improvement over previous form of DLL’s is due to
   1. Naming methods
   2. Ease of copying from one system to another
   3. Versioning
   4. Folder locations
6. Writing code that “reacts” to the click of a button is generally known as
   1. Button action
   2. Traditional sequential processing
   3. code that must be written in C#
   4. event driven programming
7. Which of the generic .Net collections supports a key-value association?
   1. List<>
   2. Array<>
   3. Index<>
   4. Dictionary<>
8. This collection allows you to gather values of the same data type and does not require a fixed size.
   1. List<>
   2. Array<>
   3. Index<>
   4. Dictionary<>
9. When SQL Server receives a query, the first thing it does is
   1. Evaluate the WHERE clause
   2. Pull column values in the SELECT clause
   3. Perform ORDER BY
   4. Perform the FROM clause
10. This generic collection allows you to manage data using a Last-In-First-Out (LIFO) approach.
    1. Stack
    2. Queue
    3. List
    4. Array
11. The .Net framework allows new languages provided they comply with which standard?
    1. IL
    2. CTS
    3. CLR
    4. C# Syntax
12. .Net compilers translate source code and save it as…
    1. Machine language
    2. Intermediate Language
    3. .config files
    4. None of the above
13. A public key is used to
    1. Identify a record in a database
    2. Encrypt data
    3. Decrypt data
    4. Provide Caesarian encryption
14. Generally speaking, the intention to unit testing is to
    1. determine the number of lines in your code.
    2. design first and then write code.
    3. write code first and then design the test.
    4. provide a divide and conquer approach to reduce code into smaller units.
15. A CRUD matrix is used to...
    1. measure how frequently a table is used.
    2. determine what may be junk data.
    3. simplify SQL queries.
    4. determine data types in a table.
16. What is true about the use of a database supporting decisions?
    1. The more strategic a decision, the more likely it can be automated.
    2. The more strategic a decision, the less likely it can be automated.
    3. A strategic decision is aided by historical data.
    4. Generally, many day-to-day routine decisions based on well -defined formulas can be automated.
17. What is not true about .Net?
    1. It resolved the problem of managing commonly shared libraries.
    2. All data types are objects to include “primitives” such as integers.
    3. Data types of integer and char are not objects.
    4. It supports multiple programming languages.
18. Communicating with an internet of things (IoT) device is done through a
    1. Database
    2. Socket
    3. Wifi connection only
    4. LAN only
19. The following database object supports faster searches on tables with a large number of rows with many unique values across each row:
    1. Schema
    2. Master database
    3. Index
    4. Query editor
20. Generally, unit testing in Visual Studio is set up as a separate project. That implies…
    1. copies of code being tested must be pasted into the unit test.
    2. the unit test is a separate project that creates an executable file ending in .exe.
    3. the unit test project must have a reference set to the project being tested.
    4. the unit test must be in a separate Visual Studio solution.

TRUE or (FALSE and FIX)

(2.5 Points Each) If any statement below is true leave it alone. If any part of the statement is false, then explain why it’s false – do not merely cross out a word or flip a positive/negative phrasing (e.g. “is not” vs “is”)

1. The advantage of a framework is the ease of introducing it.
   1. False, because it takes time to understand a framework.
2. The goal of many information systems is to transform tacit knowledge into explicit knowledge.
3. In the world of parallel computing the advantage of using OpenMPI and OpenMP together is because they are essentially the same.
4. Hyperthreading makes physical CPU’s look like multiple CPU’s.
5. Under the hood, an endpoint of a socket is identified by the hostname and a port number.
   1. False, it’s identified by the port number
6. As a protocol, TCP is at the Network layer of the TCP/IP stack.
7. A domain name server translates an IP Address (e.g. 127.0.0.1) to a name we recognize.
8. An IP address and a MAC Address are essentially the same thing.
   1. False, a Mac address is the also known as the physical address. The IP address is the internet protocol used to connect to the internet.
9. UDP has less overhead than TCP.
10. UDP assures delivery of a message.
11. Communication using internet protocols such as TCP and UDP is similar to reading a file. The data always arrives in order as a stream of bytes.
12. When creating an application that will be a server on the internet, you may choose any port number you prefer.
13. In SQL, a UNION allows two or more results to be merged as one, even if each result set has different values but with the same number of columns and data types in the same order.
14. An ERD is meant to provide a physical definition of a database.
15. In SQL Server, the master database is frequently altered directly by users.
16. In SQL Server, a schema name might be considered similar to the idea of a namespace.
17. Indexes will always speed up queries in a database.
18. Since the internet operates at the speed of electricity, the time it takes to deliver packets (e.g. a ping) is hardly noticeable.
19. Conceptually, there is very little difference between the logical model and the physical model of data.
20. Unlike an Access database, client server does not send an entire copy of a database to a client application.

Short Essay (5 points): Explain what is meant by a separation of concerns and what are the benefits of considering it.

Short Essay (5 Points): In two or three sentences, describe what topic has been the most informative in this class.