NETWORKING/PROGRAMMING EXAM 1

Part I.

**Directions:** This test has three 4 parts to it: 25 extended response questions, 25 multiple choice questions, 25 fill in the blanks, and developing 25 application problems.

The *application problems* are worth **50% of this test**. *Extended responses*are worth **20% of the test**, and *fill in the blanks* are worth 15%. *Multiple choice* are worth 15%. **\*\*\*\*\*\*\*\*\*Remember to limit your answers to the lines.**

NAME:

DATE:

1. What are the different types of servers? Name at least four servers. Explain how each one can help a client on a PC.

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1. Explain how a **thin client is used and why it can be used**. List the **differences** between **thin client** and **fat client**.

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1. What is the significance of the OSI Model? What are the seven layers called and how do they help users understand networking in terms of their own system? Do you think TCP/IP model is better than OSI model? How many layers does TCP/IP model have and what are they?

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1. What are the differences between IPv4 and IPv6 and how does it relate to telnet? How can one use telnet to connect to a server through a command prompt?

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1. What is a network topology? List 5 different types of network topologies. How can a user create its own network virtual private network and how does it differ from being provided by one from an internet service provider?

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1. What are the main differences of a server connection and a network connection? Are there any similarities between the two?

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1. Give an example of hardware components of an information system and give an example of software application used on the information system.

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1. What is definition of IEEE 802.3? How does it differ between all the standards of 802.3a through 802.3z*? Simplify complex wording into simple wording (no technical jargon); fully explain each one.*

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1. Explain the differences between a hub, switch, and router. Explain how each one can be set up by a client (user). Draw a small model diagram of each type of network communication after the lines.

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1. What is the output of this C++ program below. *Rewrite the code below on the lines and explain on the side of them what or how each code functions for the program.* You need to comment out each line that you think would need explanation to a novice of C++ PRGRAMMING LANGUAGE.

#include <iostream.h>

main() { int n = 4, k = 2; cout << ++n << endl; cout << n << endl; cout << n++ << endl; cout << n << endl;

cout << -n << endl; cout << n << endl; cout << --n << endl; cout << n << endl; cout << n-- << endl; cout << n << endl; cout << n + k << endl; cout << n << endl; cout << k << endl;

cout << n << k << endl;

cout << n << endl; cout << " " << n << endl;

cout << " n" << endl; cout << "\n" << endl; cout << " n \* n = "; //CAREFUL! cout << n \* n << endl;

cout << 'n' << endl; return 0; }

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1. Suppose that the following code fragment is executed below. What will the output of the code fragment look like? *Remember to rewrite the code on the lines provided and put a comment next to each line you think needs to be explained further or not understandable to a reader.*

const int LENGTH = 21; char message[LENGTH];

cout << "Enter a sentence on the line below." << endl; cin >> message;

cout << message << endl; Suppose that in response to the prompt, the interactive user types the following line and presses Enter: *Please go away.*

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1. Answer the questions below concerning the following fragment of code.

int n;

cout << "Enter an integer: "; cin >> n;

if (n < 10) cout << "less than 10" << endl;

else if (n > 5) cout << "greater than 5" << endl;

else cout << "not interesting" << endl;

1. What will be the output of the fragment above if the interactive user enters the integer value 0 ?

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1. What will be the output of the fragment above if the interactive user enters the integer value 15 ?

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c. What will be the output of the fragment above if the interactive user enters the integer value 7 ?

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d. What values for n will cause the output of the fragment above to be "not interesting"?

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1. Explain one would correctly set up their PATH system environment after they have installed the JDK product in order to create a java program and to be able to use the DOS or command prompt to compile a java program.

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1. What will the outcome of creating this project using html and javascript together? *This time comment each line TO GET FULL CREDIT.*

<html>

<head> </head>

<body>

<div id='feedback'></div>

<script type='text/javascript'> document.getElementById('feedback').innerHTML='<P><font color=red>Hello World!</font>';

</script>

</body>

</html>

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1. Explain how Javascript enhances HTML ? Give an example with any code you choose below.

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1. In JAVA coding, why do child classes have to implement parent abstract method’s? Why can’t it methods be implemented in the base class?

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1. What is wrong with this coding in JAVA?

abstract class Upper {

abstract void doSomething(String run);

}

class Middle extends Upper

{

void doSomething()

{

}

}

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1. How would a user be able to connect to a remote server? Can they download any software to accomplish this task?

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1. How can you open a link in a new tab/browser window using HTML codes?

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1. What is a proxy server used for and how should you use it and why is it is used?

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1. What are the DIFFERENCES between database server and email server? How would you explain to someone in simple terms how to set each one up? Is it possible to set it up? Are there any similarities between the two?

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1. What are benefits of using an IDE over notepad to compile applications?

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1. What are the differences between wired and wireless transmission media? Give some examples.

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1. What are the advantages and disadvantages of *server virtualization* and *network virtualization*?

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1. How can one create a farm server and what is used for and why is it used? What potential benefits and drawback are associated with this type of server?

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Part II. Multiple Choice

1. A device designed to filter and transfer data packets between dissimilar types of computer networks is called:

* Hub
* Load balancer
* Router
* Switch

1. Which of the following answers refers to a data link layer (Layer 2) device designed to forward data packets between Local Area Network (LAN) segments?

* Switch
* Firewall
* Router
* Hub

1. A device that apart from the function of an ordinary network switch can also provide additional functions at higher levels of the OSI reference model is known as a multilayer switch.

True

False

1. What are the characteristic features of satellite Internet connections? (Select all that apply)

Lack of signal interference

Signal latency

High connection speed

Interference (weather dependent)

Low connection speed

1. The use of cable modems within a standard cable television infrastructure for Internet access is commonly referred to as:

* Broadband cable
* Frame relay
* Metro-Ethernet
* Dial-up

1. What is the most common type of a DSL Internet access?

VDSL ADSL SDSL UDSL

1. Which of the following answers refers to a method for establishing a dedicated point-to-point link between two networked devices?

PSK PTR PKI PPP

|  |  |
| --- | --- |
|  | 1. What will be the output of the program?   interface Foo141  {  int k = 0; /\* Line 3 \*/  }  public class Test141 implements Foo141  {  public static void main(String args[])  {  int i;  Test141 test141 = new Test141();  i = test141.k; /\* Line 11 \*/  i = Test141.k;  i = Foo141.k;  }  } |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | A. | |  |  | | --- | --- | | Compilation fails. |  | | |  | B. | |  |  | | --- | --- | | Compiles and runs ok. |  | | |  | C. | |  |  | | --- | --- | | Compiles but throws an Exception at runtime. |  | | |  | D. | |  | | --- | | Compiles but throws a *RuntimeException* at runtime. | | |



|  |
| --- |
| What will be the output of the program?  class Q207  {  public static void main(String[] args)  {  int i1 = 5;  int i2 = 6;  String s1 = "7";  System.out.println(i1 + i2 + s1); /\* Line 8 \*/  }  } |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | A. | |  |  | | --- | --- | | 18 |  | | |  | B. | |  |  | | --- | --- | | 117 |  | | |  | C. | |  |  | | --- | --- | | 567 |  | | |  | D. | |  | | --- | | Compiler error | |  | |  | | |

1. What will be the output of the program?

public class Switch2

{

final static short x = 2;

public static int y = 0;

public static void main(String [] args)

{

for (int z=0; z < 4; z++)

{

switch (z)

{

case x: System.out.print("0 ");

default: System.out.print("def ");

case x-1: System.out.print("1 ");

break;

case x-2: System.out.print("2 ");

}

}

}

}

1. What will be the output of the program?

class A

{

final public int GetResult(int a, int b) { return 0; }

}

class B extends A

{

public int GetResult(int a, int b) {return 1; }

}

public class Test

{

public static void main(String args[])

{

B b = new B();

System.out.println("x = " + b.GetResult(0, 1));

}

}

#### Which of the following characters ends every C# statement?

(A) Period (.)

(B) Colon (:)

(C) Semicolon (;)

(D) Comma (,)

#### Which of the following is/are true about the structure?

(A) Structures do not support Inheritance

(B) Structures are value type

(C) Structures can not have contractor

(D) All of the above are true

#### Two methods with the same name but with different parameters.

(A) Overloading

(B) Multiplexing

(C) Duplexing

(D) Loading

#### Which of the following statements correctly define .NET Framework?

(A) It is an environment for developing, building, deploying and executing Desktop Applications, Web Applications and Web Services.

(B) It is an environment for developing, building, deploying and executing Distributed Applications.

(C) It is an environment for development and execution of Windows applications.

(D) It is an environment for developing, building, deploying and executing only Web Applications.

1. What is the difference between XML and HTML?

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| --- |
| HTML is used for exchanging data, XML is not. |
| XML is used for exchanging data, HTML is not. |
| HTML can have user defined tags, XML cannot |
| Both b and c above |

1. \_\_\_\_ is the current standard language used to create Web pages.
   1. HTML
   2. DHTML
   3. XHTML
   4. XML
2. \_\_\_ view shows the underlying HTML code for the page, but not how it will look on a browser.

a. Code and Design

b. Code

c. Debugging

d. Design

1. \_\_\_\_ contain multiple links that are usually organized in rows or columns. a. Image maps b. Forms c. Banners d. Navigation bars
2. When using CSS styles, the Property inspector font sizes are shown in \_\_\_\_ rather than HTML text sizes.

a. picas

b. points

c. pixels

d. inches

1. **\_\_\_\_\_\_\_\_\_\_\_ JavaScript is also called client-side JavaScript.**

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| --- |
| Microsoft |
| Navigator |
| LiveWire |
| Native |

1. **How to append a value to an array of Java Script?**

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| --- |
| arr[arr.length] = value |
| arr[arr.length+1] = new Arrays() |
| arr[arr.length-1] = value |
| arr[arr.length\*1] = value |

1. **Which of the following is a server-side Java Script object?**

|  |
| --- |
| Function |
| File |
| FileUpload |
| Date |

1. **Which of the ways below is incorrect of instantiating a date?**

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| --- |
| new Date(dateString) |
| new Date() |
| new Date(seconds) |
| new Date(year, month, day, hours, minutes, seconds, milliseconds) |

1. **Which of the following are capable of Java Script functions?**

|  |
| --- |
| Returning multiple values |
| Accepting parameters and returning values |
| Accepting parameters |
| all of the above |

Part III. Fill In The Blanks

1. The relational expression -30>=0 is \_\_\_\_\_\_\_\_\_\_\_.
2. C keywords can be used as variable names. This statement is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. C program execution begins from C program execution begins from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Consider the following statements; The value of b is THEN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

a=10;

b=a++;

1. The Java interpreter translates a Java program from \_\_\_\_\_\_\_\_\_\_ to machine language.
2. A(n) \_\_\_\_\_\_\_\_\_\_ is a set of instructions that tells the basic strategy for solving a problem.
3. In creating a program you need to frequently revise the source file, compile new bytecodes, and run the program to see the result. This process is called the \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_, and \_\_\_\_\_\_\_\_\_\_\_\_\_cycle.
4. A nonstandard English-like language, \_\_\_\_\_\_\_\_\_\_, lets you specify your algorithm with more precision than you can in plain English, but with less precision than is required with a formal programming language.
5. \_\_\_\_\_\_\_\_\_\_ is a network-friendly programming language derived from C++ that permits a piece of software to run directly on many different platforms.

|  |  |
| --- | --- |
|  | \_\_\_\_\_\_\_\_\_\_ is a network-friendly programming language derived from C++ that permits a piece of software to run directly on many different platforms. |

1. The property of \_\_\_\_\_\_\_\_\_\_ allows an individual object to know how, using its own methods, to process the message in the appropriate way for that particular object when a message is sent.
2. 2 in decimal is equal to in \_\_\_\_\_\_ octal.
3. 8 in decimal is equal to in \_\_\_\_\_\_\_\_\_\_\_\_hexadecimal.
4. 29 in hexadecimal is equal to in \_\_\_\_\_\_\_decimal.
5. 264 in decimal is equal to in \_\_\_\_\_\_ hexadecimal.
6. 654 in octal is equal to in \_\_\_\_\_\_\_\_\_decimal.
7. Java is a type of what\_\_\_\_\_\_\_\_\_\_\_ programming language.
8. **\_\_\_\_\_\_\_\_\_\_\_** is an OOP programming language while **\_\_\_\_\_\_\_\_\_\_\_\_\_** is an OOP scripting language.
9. **Java compiler** translates **Java** programs into a language called **Java** \_\_\_\_\_\_\_\_\_\_\_. **\_\_\_\_\_\_\_\_\_**is used to run the compiled **Java** bytecode program.
10. An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_has two components, the network address and the host address.
11. IP addresses are divided into five different classes. These classes are \_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_,
12. The difference between static IP address and dynamic address are static IP addresses are those types of IP address that never change once they are assigned to a device on a network, while dynamic address \_\_\_\_\_\_\_\_\_ change.
13. Convert the IP address from binary to dotted decimal format.

01010001.00000011.00100101.01010111

1. Convert the IP address from binary to Decimal 10000001.11000110.01101110.10001000
2. Convert Binary to Decimal 00011101.10101001.01100110.11000111

Part IV. Application Creation

### Write a C++ program to print the following lines:

You are 10 years old.   
You are too young to play the game.

1. Write a C++ program to prompt the user to input her/his name and print this name on the screen, as shown below. The text from keyboard can be read by using cin>> and to display the text on the screen you can use cout<<.