

**INTERNATIONAL DIPLOMA IN COMPUTING**

**INTERNATIONAL DIPLOMA IN NETWORK CYBERSECURITY**

**DIPLOMA IN BUSINESS & INFORMATION TECHNOLOGY**

**INFORMATICS COMPUTER DIPLOMA**

**INTERNATIONAL DIPLOMA IN INFORMATION TECHNOLOGY & COMMUNICATION**

**INTERNATIONAL DIPLOMA IN ENGINEERING & TECHNOLOGY**

**COMPUTER AND INFORMATION PROCESSING (C1001/CS111/CCT101)**

ASSIGNMENT

TERM 1 2012

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* *I understand what is meant by plagiarism*
* *The implication of plagiarism has been explained to me by me institution*
* *This assignment is all my own work and I have acknowledged any use of the published and unpublished works of other people*

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**Module Code : C1001/CS111/CTC101**

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| **Criteria** | **Base Mark** | **Graded Mark** | | **Comments** |
| **Question 1**  Pointing device is an input device that allows user to control a pointer on the screen. There are various types of pointing devices available in the market. Write short notes for the following devices:   1. Trackball 2. Touchpad 3. Touch screen 4. Joystick | **10 points**  **10 points**  **10 points**  **10 points** |  |  | |
| 1. **Question 2** 2. On your visit with Gary Sharma, he tells you that he would like to know about some basic network designs. Draw examples of the basic network topologies for Gary. Then, summarize those topologies. 3. Gary has read about using physical communication media to wire the building. List different types of physical communication media and compare the advantages and disadvantages of each. | **35 Marks**  **25 Marks** |  |  | |
| **TOTAL** | **100 Marks** |  |  | |

Table of Contents

Table of Contents 3

Assignment Questions 4

Pointing Device 5

Bus Topology 6

Star Topology 7

Ring Topology 8

Twisted Pair 9

Coaxial Cable 10

Fiber Optics 10-11

References 11-12

Assignment Questions:

Question 1

Pointing device is an input device that allows user to control a pointer on the screen. There are various types of pointing devices available in the market. Write short notes for the following devices:

1. Trackball [10]
2. Touchpad [10]
3. Touch screen [10]
4. Joystick [10]

Question 2

A group of physicians is building a new two-storey building that is four blocks from the hospital. Their business manager, Gary Sharma, has contacted you about assisting them in selecting a basic network topology and what communications media to use. The plans for the building are not complete, but Gary wants to begin discussions on different options for networks that can be used.

1. On your visit with Gary Sharma, he tells you that he would like to know about some basic network designs. Draw examples of the basic network topologies for Gary. Then, summarize those topologies.
2. Gary has read about using physical communication media to wire the building. List different types of physical communication media and compare the advantages and disadvantages of each.

**Question Number 1**

**Trackball**

A kind of pointing device used to enter motion data into computers or other electronic devices. Same as the mouse does, it is designed with a moveable ball on the top, which can be rolled in any direction.

**Touch Pad**

It is a small, flat sensitive pad found in all laptops and notebook computers. It can be use by moving a finger along the pad so that the user can move the pointer on the screen. Touch pad was developed to provide a more natural and instinctive connection for the computer user than the mouse.

**Touch Screen**

Like a touch pad, this pointing device can also be use by moving a finger along the screen to move a pointer and by tapping the screen; it can point directly to the screen.

**Joystick**

A kind of pointing device attached to a computer or video game. Joystick is a vertical rod mounted on a base with one or two buttons. It is use as a game controller in home computers.

**Question A**

Topologies remain an important part of program design idea. You can probably build a home computer without understanding the difference between a bus design, but becoming familiar with the standard topologies gives you a better understanding of essential social media concepts like places, development, and paths. Here are some examples of basic network topologies.

**Bus Topology**

A bus topology is a kind of system installation where each computer and system is linked with just one cable. Computer in a bus topology system connect by dealing with information to a particular computer and sending out that information on the cable as digital alerts. Network information in the form of digital alerts is sent to all the computers on the system. Only the computer whose deal with suits the deal with protected in the original indication allows the information. computer systems on a bus either deliver information to other computers on the system or pay attention for information from other computers on the system. They are not accountable for moving information from one computer to the next. Consequently, if one computer isn't able to send information, it does not impact the rest of the system. Because the information, or digital indication, is sent to the entire system, it journeys from one end of the wire to the other.

If the indication is permitted to continue, it will keep returned back and forth along the wire and avoid other computers from delivering alerts. Therefore, the indication must be ceased after it has had a chance to arrive at the proper location. To stop the indication from returned, a element known as a terminator is placed at each end of the wire to process free alerts. Taking in the indication opens up the wire so that other computers can deliver information. Both finishes of each wire section on the system must be connected to something. For example, a wire end can be connected to your personal computer or a plug to boost the wire duration. Any open wires that are not connected to something must be ended to avoid indication jump.

node

**Star Topology**

Information from the resource is first sent to the hub and is then relocated to the other nodes. It is simple to add or eliminate nodes or work stations in this topology. This kind of topology gives better performance as data. It does not complete through every node as opposed to Bus topology. If a particular work station or a node gets one then the whole system is not impacted. But if the main work station or the hub goes down, then the whole system breaks. Mostly star topology uses twisted pair cable, however it can also be used without twisted pair cable.

Information on a star topology goes through the hub, change, or concentrator before ongoing to its location. The hub, change, or concentrator controls and controls all features of the system. It also features as a repeater for the information circulation. This setting is typical with twisted pair cable; however, it can also be used with coaxial wire or fiber optic wire. Advantages of star topology are easy to install and implement. Defective nodes can be quickly eliminated without affecting the other nodes in the loop. And it gives better performance as information does not pass through various nodes as compared with bus topology. But if the central hub fails then the whole network is disrupted.

**Ring Topology**

A ring topology or also known as token ring is a network topology where each network computer and device is connected to each other forming a large circle. Ring topology uses a call topology whereby the information is sent from one device to the next and so on around the ring until it finishes up returning where it began. It also uses a small moving method which indicates that a device can only use the system when it has management of the symbol; this guarantees that there are no problems because only one device can use the system at once.

It is a network topology in which the nodes or the computer systems are linked in a shut cycle. Each node is linked with two other nodes and when the information is sent it journeys across all nodes in one particular route. Ring topology is used when there is hefty circulation of information as it has higher ability to deal with information and does not even need any main work station to deal with the information indication.

**Question B**

**Twisted Pair Wire**

Twisted-pair of wires are usually made of copper. Consist of two separate insulated copper wires that are twisted together. The wires are twisted together to reduce noise which is electrical disturbance that can degrade communication. These types of wires are inexpensive and easy to install and use. It is commonly used in telephone lines and short distance digital data transmission.

**Advantages**

* **High availability**—More than 1 billion telephone subscriber lines based on twisted-pair have been deployed, and because it's already in the ground, the telcos will use it. Some say that the telcos are trapped in their copper cages; rather than build an infrastructure truly designed for tomorrow's applications, they hang on to protecting their existing investment. It is a huge investment: More than US$250 billion in terms of book value is associated with the twisted-pair deployed worldwide. This can be construed as both an advantage and a disadvantage.
* **Low cost of installation on premises**—the cost of installing twisted-pair on premises is very low.
* **Low cost for local moves, adds, and changes in places**—An individual can simply pull out the twisted-pair terminating on a modular plug and replace it in another jack in the enterprise, without requiring the intervention of a technician. Of course, this assumes that the wiring is already in place; otherwise, there is the additional cost of a new installation.

**Disadvantages**

* **Limited frequency spectrum**— The total usable frequency spectrum of twisted-pair copper cable is about 1MHz.
* **Limited data rates**— The longer a signal has to travel over twisted-pair, the lower the data rate. At 30 feet (100 m), twisted-pair can carry 100Mbps, but at 3.5 miles (5.5 km), the data rate drops to 2Mbps or less.
* **Short distances required between repeaters**—More components need to be maintained, and those components are places where trouble can arise, which leads to higher long-term operational costs.
* **High error rate**—Twisted-pair is highly susceptibility to signal interference such as EMI and RFI.

**Coaxial Cable**

Consist of a single wire surrounded by three layers. (1) An insulating material (2) a woven or braided material (3) a plastic outer coating. Coaxial cable was invented in 1929 and first used commercially in 1941. This wire is called "coaxial" because it contains one actual route that provides the indication enclosed (after a part of insulation) by another concentric actual route, both running along the same axis. The external route works as a floor. Many of these cords or couples of coaxial pipes can be placed in a single external sheathing and, with repeaters, can bring information for a long way.

**Advantages**

* Highly resistant to EMI (electromagnetic interference)
* Highly resistant to physical damage

**Disadvantages**

* Expensive
* Inflexible construction (difficult to install)
* Unsupported by newer networking standards

**Fiber Optic Cable**

Cables that consist of dozens or hundreds of thin strands of glass or plastic that houses light to transmit signals. Using light impulses sent along a flexible glass follicle, fiber optic cables transmit information and alerts faster and with increased information compared to traditional copper or aluminum cords or cables. Flexible a variety of information transmission applications and able to send information over very long ranges, visual fiber provides a popular choice for analogue and high-definition televisions, telecoms and networking sectors.

**Advantages**

* Large Capacity can carry hundreds/thousands of times more information than copper.
* Electrical Interference not affected by electromagnetic interference or radio frequency interference provides clean communication path in very hostile EMI environments it is also immune to cross-talk (light radiated from one fiber cannot be recaptured by another fiber).
* Insulation optical fiber is an insulator the glass fiber eliminates the need for electric currents for the communication path.
* Security cannot be tapped by conventional electrical means such as surface conduction or electromagnetic induction, and is very difficult to tap onto optically radio or satellite communication signals can easily be captured for decoding.
* Reliability & Maintenance when properly designed, immune to adverse temperature and moisture conditions long life span ~30yrs no corrosion, intermittent or lost signals, and is not affected by short circuits, power surges, or static electricity.
* Safety in Flammable/Explosive Plants copper carries current and power, and can spark setting off huge fires or explosions. Fiber has no current, no power, and no possibility of igniting a fire.
* Versatility fiber systems are available for most data, voice and video communications.

**Disadvantages**

* Electrical-to-Optical Conversion electrical signal must be converted to light and then back again.
* Right of Way mountainous terrain or some urban environments may limit the access to fiber cable. Wireless communication methods for these situations may be more suitable.
* Special Installation special techniques are required for installing the links, although the connectors are getting easier to use crimping, wire wrapping, or soldering can not apply to fiber.
* Repairs not easily repaired when damaged require a skilled technical crew with proper equipment.

**References:**

ANONYMOUS. 2009. Track ball definition. http:// www.techterms.com/definition/ trackball. August 24, 2012

ANONYMOUS. 2012. Touchpad definition from PC magazine Encyclopedia. <http://www.pcmag.com/encyclopedia_term/0,1237,t=touchpad&i=53019,00.asp>. August 24, 2012

ANONYMOUS. 2012. What is touchscreen? A word definition from webopedia computer dictionary. <http://www.webopedia.com/TERM/T/touch_screen.html>. August 24, 2012

ANONYMOUS. 2012. Joystick definition from PC magazine Encyclopedia. <http://www.pcmag.com/encyclopedia_term/0,1237,t=joystick&i=62939,00.asp>. August 24, 2012

ANONYMOUS. 2012. What is Bus Topology? [http://www.computerhope.com/ jargon/b/bustopol.htm](http://www.computerhope.com/%20jargon/b/bustopol.htm) August 24, 2012

ANONYMOUS. 2012. Definition, advantages and disadvantages of star topology. <http://www.completepcpedia.com/star_topology.html>

ANONYMOUS. 2012. Ring Topology. [http://it.toolbox.com/wiki/index.php/ Ring\_Topology](http://it.toolbox.com/wiki/index.php/%20Ring_Topology). August 24, 2012

WINTERGURL88. 2012. My Winter Story: The Advantages and Disadvantages of twisted pair. [http://wintergurl88.blogspot.com/2009/09/advantages-and- disadvantages-of-twisted.html](http://wintergurl88.blogspot.com/2009/09/advantages-and-%20%20disadvantages-of-twisted.html). August 24, 2012

WINTERGURL88. 2012. My Winter Story: The Advantage and Disadvantage of Coaxial Cable. [http://wintergurl88.blogspot.com/2009/09/advantages-and-dis advantages-of-coaxial.html](http://wintergurl88.blogspot.com/2009/09/advantages-and-dis%20advantages-of-coaxial.html). August 24, 2012

WINTERGURL88. 2012. My Winter Story: The Advantage of Fiber Optics. <http://wintergurl88.blogspot.com/2009/09/advantages-of-fiber-optics.html>