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Lab 2: Standards

**Group Brain Storming:**

You work for a research company as a member of the **Experimental Research Team**. Presently, the company is growing quickly and to exchange files, users must physically walk a disk or drive over to someone else if they wish to share files; this is inefficient. The company wants your team to develop a new way to exchange files electronically between to two computers using a cable. Today, is the first meeting of the team to discuss the problem.



**Instructions:**

1. The teacher will assign you to a group of 6 students
2. Each group must pick a leader. Take a minute to decide who will be the leader. The leader’s role is to make sure that the rules of the exercise are followed and to report to the teacher at the end of the exercise.
3. Use the Brain Storming form on the next page.
4. RULE1: Go around the group and each person MUST give one topic they feel is necessary for communication to occur. There are no “bad” topics. And no one can be “passed over”. Each group member writes the topic in the balloon.
5. RULE2: Go around the group again and each person MUST state why they think their topic is important for communication to occur.
6. RULE3: After the discussion, go around the group again and find out from each person which topics they feel are the most important and second most important. Everyone writes a “1” and “2” beside the balloon respectively.
7. RULE4: Each group now debates only the topics marked with a “1” and “2”. The group MUST come to a consensus on which 2 topics the group feels are the most important and second most important. Everyone writes a “1\*” and “2\*” beside the balloons.
8. The leader will announce the 2 topics to the teacher who will write them on the board. most important topics.

**Brain Storming Work Sheet**

**What things must be worked out for 2 computers to communicate using a cable?**

Serial and parallel connection

Ethernet Connection

USB hub

IP address

USB connection

Physical interface

**Interface:**

1. Electrical Interface
2. Mechanical Interface
3. Procedural Interface
4. Functional Interface

**Encoding:**

1. Do a Google search and find the ASCII decimal and binary values for the capitalized first letter of your first name .
2. Write the decimal value \_\_78\_\_ . Write the binary value\_\_\_\_1001110\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Write the binary value at the top of the chart. Write a bit between each vertical dotted line.
4. Use the chart to map the binary value using NRZI encoding (Non-Return to Zero Inverted). A change in voltage at the beginning of a clock cycle (vertical dotted lines) is a “1”. No change in voltage at the beginning of a clock cycle is a “0”. The horizontal dotted lines represent voltage 0.5 voltage levels. Map each letter to 6th horizontal line which represents +3 volts. Do not go below the hortizontal axis in mapping your value.
5. After mapping the value, answer the following questions:
   1. How many characters in total were transmitted? \_\_\_\_one character\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. How many bits in total were transmitted? \_\_\_\_\_\_8 bits\_\_\_\_\_\_\_\_\_\_\_\_
   3. How many times did the signal change? (baud rate) \_\_\_4\_\_\_baud rate\_\_\_\_\_\_\_\_\_\_\_\_
   4. What is the bit rate? \_2\_\_\_\_\_\_

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**Standard Making Bodies**

Do a Google search and write the answers in the space below. Use your own words. DO NOT copy and paste the answers. The answers are all one line of text.

1. **International Organization for Standardization (ISO)**
2. What is the web site address for the ISO?

<https://www.iso.org/home.html>

1. What type of standard making body is it and who are its members?

ISO is a product quality certifier and is only open to national standards institutes or similar organization that represents standardization in their country.

1. What is an example of an ISO standard?

ISO 9001 – quality management system

ISO 14001 – Environmental Management System

ISO 50001 – Energy Management System.

1. **Institute of the Electrical and Electronic Engineers (IEEE)**
2. What is the web site address for the IEEE?  
   <https://www.ieee.org/>
3. What type of standard making body is it and who are its members?  
   IEEE develops global standards in a broad range of industries, including power and energy, biomedical and health care, information technology and robotics and many more. Engineers, Scientists and allied professionals are members of IEEE.
4. What is an example of an IEEE standard?

IEEE 260 - Standard Letter Symbols for Units of Measurement, IEEE-260-1978 (now 260.1-2004)

IEEE 488 - Standard Digital Interface for Programmable Instrumentation, IEEE-488-1978 (now 488.1)

IEEE 610 - Standard Glossary of Software Engineering Terminology

1. **International Telecommunications Council (ITU-T) Telecommunications**
2. What is the web site address for the ITU?  
     
   <https://www.itu.int/en/Pages/default.aspx>
3. What is the web site address for the ITU-Telecom?  
   <https://telecomworld.itu.int/>
4. What type of standard making body is it ITU-T and who are its members?

ITU-T coordinates standards for telecommunication and information Communication Technology. Membership of ITU is open to all Members States of the United Nations, which may join the union as Member States and there are currently 196 Members of the ITU.

1. What is an example of an ITU-T standard?

ASN.1 – Abstract Syntax Notation one

Coding of audio G.711 and G.72x series

Fax standards T.2-T.4,T.30,T.37,T.38

1. **What is the name of Canada’s standard organization?  
     
   Standards Council of Canada**
2. What is its mission or mandate?

Mandate

Promote the participation of Canadians in voluntary standards activities, promote public-private sector cooperation in relation to voluntary standards in Canada, develop standards-related strategies and long-term objectives, foster quality, performance and technological innovation in Canadian goods and services through standards-related activities, and coordinate and oversee the efforts of the persons and organizations involved in the National Standards System.