Project-2 of EE 390

Term 071

Due Date: 16th January, 2008

Submission: Please upload (in WebCT) the projects

Project Description:

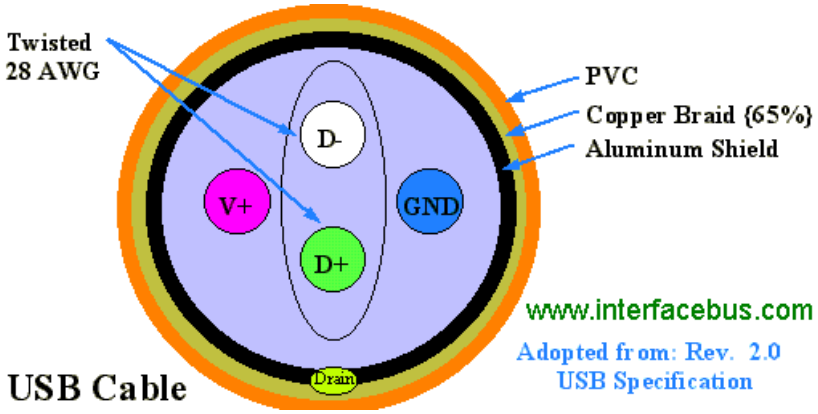
- Describe the techniques using which we can make a LED blink. Assume that the LED is connected in one of the data line of an USB port. (The project requirements are also clearly illustrated and demonstrated in the CLASS for a LED connected with the Parallel port instead of USB)

- A brief description of USB port is given below.

- **USB Pinout**

USB Pinout, Cable Assembly		
Pin	**Signal Name**	**Description**
1	VBUS	Red (5V)
2	D-	White
3	D+	Green
4	GND	Black
Shell	Shield	Drain

The USB pinout is the same for either a type A or B connector, the difference is in the shape



USB Power:

USB specification provides a 5 V (volts) supply on a single wire from which connected USB devices may draw power. The specification provides for no more than 5.25 V and no less than 4.75 V (5 V±5%) between the positive and negative bus power lines.[10] Initially, a device is only allowed to draw 100 mA. It may request more current from the upstream device in units of 2 mA up to a maximum of 500 mA.

If a bus-powered hub is used, the devices downstream may only use a total of four units — 400 mA (i.e. 2 watts) — of current. This limits compliant bus-powered hubs to 4 ports. The host operating system typically keeps track of the power requirements of the USB network and may warn the computer's operator when a given segment requires more power than is available.

USB supports three data rates:

- A **Low Speed** (1.1, 2.0) rate of 1.5 Mbit/s (187 kB/s) that is mostly used for Human Interface Devices (HID) such as keyboards, mice, and joysticks.
- A **Full Speed** (1.1, 2.0) rate of 12 Mbit/s (1.5 MB/s). Full Speed was the fastest rate before the USB 2.0 specification and many devices fall back to Full Speed. Full Speed devices divide the USB bandwidth between them in a first-come first-served basis and it is not uncommon to run out of bandwidth with several isochronous devices. All USB Hubs support Full Speed.
- A **Hi-Speed** (2.0) rate of 480 Mbit/s (60 MB/s).