**Department of Electrical Engineering**

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| **Faculty Member: Asma Majeed** | **Dated: 16th February, 108** |
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| **Course/Section: Computer Architecture & Organization. BSCS-6A** | **Semester: 4th** |
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**Computer Organization and Assembly Language (CS235)**

**Lab #**

**Trainer Familiarization (part 1)**

**Grp no.**

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| **Name** | **Reg. no.** | **Report Marks / 10** | **Viva Marks / 5** | **Total/15** |
| **Abdul Wahab** | **196560** |  |  |  |
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Objective

Upon completion of this lab, you will be able to locate and describe the various components on your circuit board, and demonstrate basic trainer functions.

**Answer the following questions.**

**Q1. What steps must you perform to start up the 32 bit microprocessor circuit board?**

Answer:

In order to start the 32-bit microprocessor circuit board we have to take the following steps:

1. The first step is to check and set all the control switches to their initial conditions.
2. It is very important to make sure that the CPU is in run mode.
3. Check and set all the shunts to their initial conditions.

After completing all these tasks turn on the power switch and begin working.

**Q2. What type of waveform is indicated by the logic probe LEDs?**

Answer:

The logic probe tells what kind of signal is there at the pin. It is used for testing. There are three LEDs on the logic probe, each represent a different characteristic.

1. Red: Indicates the High signal (1), means that there is a logic signal 1 at the pin you are testing.
2. Green: Indicates the Low signal (0), means that there is a logic signal 0 at the pin you are testing.
3. Yellow: Indicates a pulsing signal. This LED is used in combination with any one of the above LEDs. Thus there are two types of pulsing signals:
4. Low Pulse: If the Green LED is dim and Red LED is bright along with the Yellow LED it means that the signal is a repeating Low Pulse.
5. High Pulse: If the Red LED is dim and Green LED is bright then the signal is a repeating High Pulse.

In the lab we performed an experiment and we observed the waves on an oscilloscope, then we connected that pin with the logic probes and observed that the LEDs. The Red and Yellow LEDs were bright indicating a repeating low pulse.

The results from the oscilloscope and the logic probe matched.

**Q3. In which circuit block can you monitor the signal INTRA?**

Answer:

INTRA is the general purpose request pin and it is located on the JP4 header in the IR-Controller Circuit Block.

**Q4. When the CPU starts up in the run mode, can you read the address and data LEDs and explain the reason to your answer.**

Answer:

We cannot read the address and data LEDs when the CPU is in run mode because the CPU is performing its internal tasks continuously therefore the address and data is changing continuously and the LEDs are changing accordingly. We can only read the data and address lines when the LEDs are static in the step mode.

**Q5. Which circuit block synchronizes control signals between the CPU and support circuitry?**

Answer:

The BUS Controller synchronizes the control signals between the CPU and support circuitry. The Bus Controller synchronizes the signals to a master clock derived from an 8MHz oscillator.