University of Jordan
Faculty of Engineering and Technology
Department of Computer Engineering
Embedded Systems Lab 0907334

Work sheet 3

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Basic Embedded System Analysis
and Design

Designing a Printer

You are to design a *Printer* with the following requirements:

The Printer periodically does a self diagnostic to check if the INK tank is not empty and that there is enough paper present. If any is missing,

- **Number 1** is displayed on the **7-segment** to indicate that there not enough paper.
- **Number 2** is displayed on the **7-segment** to indicate that there not enough ink.
- **Number 3** is displayed on the **7-segment** to indicate that there not enough ink and paper.
- Otherwise **Number 4** is displayed on the **7-segment** to indicate that everything is OK.

In order for the machine to start, it should check if the order of the printing is received, if an order is being received, a green Led is lit, when the three conditions are available, the printer starts printing.

Notes:
The machine waits for printing command for a certain amount of time, if it doesn't receive any, the machine goes into <u>power saving mode</u>, and the printer does not start again until the **<u>resume button</u>** is pressed.

- *Do not assume any other functions additional to the problem above.*
- *Do not concern yourself of how printing is made!* ☺

1. You are required to analyze the system and sort out system components.
2. Assign I/O pins.
3. Divide the system to subsystems (as many as you would like).
4. Draw your system flow charts.
5. Write the program.
6. Use Proteus to simulate your machine using LEDs, pushbutton and any other components.