Singapore Polytechnic
School of Electrical and Electronics Engineering
ET0104 Embedded Computer Systems DECC 3FT/4EO

Tutorial 1 Introduction to Embedded Systems

1. Buses are: a) Address b) Control c) Address d) Data e) Address f) Data.

2. (a) Embedded systems may need a powerful processor not just for the GUI, but for sophisticated control algorithms using Fuzzy logic, neural networks and statistical signal procesing. Also, process sound and video data.

   (b) Older desktop versions will be used for embedded systems. So as desktops increase in peformance, so will embedded.

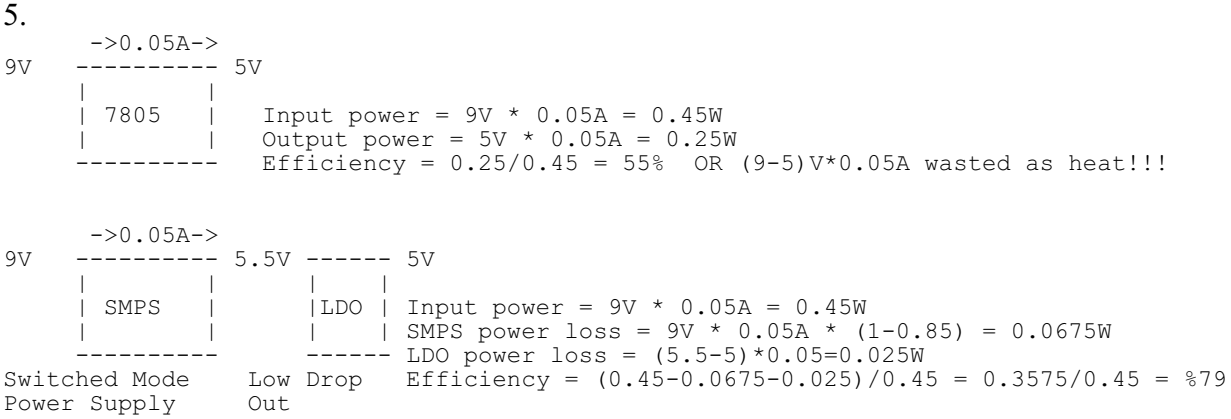
   (c) Provide real mode for compatibility and protected mode for advanced features.

   (d) Speed, data size, address size, architecture (sec 1.3.2)

3. Differences between embedded and other computers (See section 1.4) Fixed use / small size / limited resource / failure tolerance / real time / response time / reliability / simple I/O / low power / low cost.

4. i) Program Design / Power Supply - types and sources / Processor hardware features
   ii) Power supply - use SMPS/LDO / consider battery types (charge/noncharge) / alternative types - sun / movement / "stray" energy - TV/radio signals, etc

5.



6. Sect 1.5.2

Software loops	Hardware
Processor tied up	dedicated h/w
multitasking causes timing variation	timing is accurate
timing varies due to prefetch	can be finer resolution than sofware