

系所組別： 生物醫學工程學系乙組

考試科目： 計算機概論

考試日期：0219，節次：2

※ 考生請注意：本試題 可 不可 使用計算機

1. (30 %) Please give short answers:
  - (a) What are online spying tools? Please give an example.
  - (b) Please differentiate the following malware: viruses, worms, Trojan horse.
  - (c) What is Object Oriented Programming (OOP)?
  - (e) What are data mining and data scrubbing?
  - (d) What is RFID reader?
  - (e) Firmware vs. Software
2. (20 %) What is augmented reality (AR)? What are the major differences between AR and virtual reality (VR)? Could you describe some potential applications of AR to medical applications?
3. (15 %) What are biometric inputs? Could you give a application example of biometric inputs in clinical or other routine use?
4. (15 %) (a) What are the major differences between software interrupt and hardware interrupt? Please give an example for each case.  
(b) How the CPU or microprocessor would react if there are collisions between software interrupt and hardware interrupt as well as there are collisions among several hardware interrupts?
5. (20 %) Wireless communication and cloud computing are quite popular now. A clinical researcher at National Cheng Kung University Hospital wishes to establish a portable wireless data acquisition device to record physiological signals, e.g. electrocardiogram (ECG, signals from heart) from patients in the hospital. Assume that the analogue ECG signal is readily available for digital sampling. (Note: This is a “free-style” question. Just utilize what you have learned with some imagination).
  - (a) Could you first identify the essential components needed for the wireless device using block diagram and flowchart?
  - (b) Please compare the feasibility of using wireless transmission of IrDA (Infrared Data Association), Bluetooth, Wi-Fi (IEEE 802.11), analogue transmission for this application from aspects of data rate, transmission distance, size, and cost.
  - (c) How to apply cloud computing in this clinical cases using wireless transmission of physiological data?