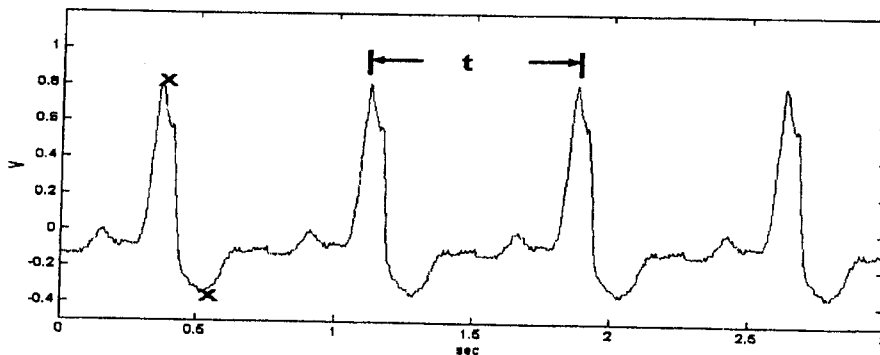


本試題是否可以使用計算機：可使用，不可使用（請命題老師勾選）

1. (30 %) Short answers:
  - (a) What are online spying tools? Please give an example.
  - (b) Please differentiate the following malware: viruses, worms, Trojan horse.
  - (c) List three ways to combat spam.
  - (d) What is Object Oriented Programming (OOP)?
  - (e) What are data mining and data scrubbing?
  - (f) Explain Application Programming Interface (API) and socket.
2. (10 %) What are cookies? Please describe the differences among session cookies, first party cookies, third party cookies.
3. (10 %) What are Virtual Private Networks (VPNs)? Describe how VPN makes communications secure.
4. (10 %) What is RAID? Please compare varied levels of RAID, e.g. striping, mirroring and others?
5. (10 %) Briefly describe machine cycles. How can a pipeline structure execute more instructions?
6. (15 %) The following figure is an acquired ECG waveform. Assume that the sampling rate is 200 Hz, i.e. 200 ECG data points per second.
  - (a) Please write a segment of program using your familiar computer language or pseudo code to detect peak-to-peak amplitude (between two x's) and peak-to-peak interval (t).
  - (b) Convert the peak-to-peak interval to hear rate in terms of beats per minute (BPM). Draw a flowchart to express your algorithm and assumptions in (a)-(b).



7. (15 %) 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.