1. Matrix $A$ is a non-singular lower triangular matrix whose dimensions are $n \times n$. $x$ and $y$ are vectors whose dimension are $n \times 1$. $A$, $x$ and $y$ satisfy the equation $Ax = y$. Given $A$ and $y$, write a computer program in your favorite language to compute $x$ without inverting $A$. (20 points)

2. Explain the following computer terminologies:
(1) Virtual memory (2) Kernel (3) Parallel processing (4) TCP/IP (5) Byte (15 points):

3. UNIX is popular operating system in a workstation, while Microsoft DOS is commonly used in a PC. Show the equivalent Microsoft DOS commands of the following UNIX commands and explain briefly the meanings of these commands:
(1) ls (2) df (3) rm (4) mv (5) cat (15 points)

4. 請解釋下列名詞 (20%)
1. PDA (Personal Digital Assistants)
2. EDI (Electronic Data Interchange)
4. SQL

5. 何謂四元樹？若以四元樹方式進行台灣地區地理編碼，若最高空間解析度達 $1m \times 1m$，請計算單一圖層之數據量約有多少。(15%)

6. 請舉例解釋深先搜尋 (Depth-First Search) 與廣先搜尋 (Breadth-First Search)。(15%)