

國立高雄第一科技大學 97 學年度 碩士班 招生考試 試題紙

系所別：運籌管理系

組別：物流資訊組

考科代碼：3142

考科：計算機概論

注意事項：

- 1、本科目可使用本校提供之電子計算器。
- 2、請於答案卷上規定之範圍作答，違者該題不予計分。

1. 請利用您所熟悉的程式語言或近似語言碼 (pseudo-code)，設計方法以計算以下之問題：(程式中請適當的註解，方法應有適當之輸入及輸出值)

- i. $1 - 1/2 + 1/3 - 1/4 + 1/5 - \dots + 1/N$ (15%)
- ii. $0 + 1 + 1 + 2 + 3 + 5 + 8 + 13 + 21 + 34 + \dots + N$ (15%)
- iii. 請寫出一個程式方法來計算兩矩陣相乘。(20%)

提示：

- 相乘 $a*b=c$

$$\begin{bmatrix} 1 & 3 \\ 4 & 5 \\ 6 & 9 \end{bmatrix} \times \begin{bmatrix} 2 & 4 & 5 & 7 & 3 \\ 7 & 8 & 9 & 1 & 4 \end{bmatrix} = \begin{bmatrix} 23 & 28 & 32 & 10 & 15 \\ 43 & 56 & 65 & 33 & 32 \\ 75 & 96 & 111 & 51 & 54 \end{bmatrix}$$

上例中第一個矩陣 a 的維度是 3×2 ，b 的維度是 2×5 ，c 的維度必須為 3×5 。

$$c[i,j] = \sum_{k=0}^{\text{column}} a[i,k] * b[k,j]$$

矩陣相成的規則為 $c[i,j] = \sum_{k=0}^{\text{column}} a[i,k] * b[k,j]$ ，其中 column 為 a 的列數 (亦即 b)，在上例中為 2。

For example: $c[0,0] = a[0,0]*b[0,0]+a[0,1]*b[1,0] = 1*2+3*7 = 23$

請寫一個方法(method)，輸入值為兩個矩陣及矩陣之維度，輸出值為相乘後之矩陣。

2. Please articulate an emerging computer technology and state your opinions?(10%)

3. There are two general forms of free trial software in market versus one form of freeware: a free fully functional version with limited trial time or a free "demo" version with limited functionality. An example of the former case is McAfee Uninstaller, an uninstall tool which allows users to trial the product for 30 days, while an example of the latter case is RealPlayer, a free media player which is the "light" version of RealPlayer Plus because RealPlayer Plus offers many more advanced features, such as advanced CD burning, movie-on-demand and live music stations. Another example is Geometer's Sketchpad, a math visualization tool. Sketchpad's free evaluation version offers almost identical functionalities of the full version except that you cannot save, print, copy and paste. Sometimes a firm uses a combination of the two forms. For example, a consumer can download the equation editor MathType for free, which works in full functionality for 30 days and after that it becomes a limited functional version if the user does not pay. Usually, a free trial with time lock attempts to address customer's uncertainty about the utility and quality of the product. On the other hand, freeware is a kind of computer software that is available for use at no cost or for an optional fee. Since freeware refers to the terms under which software is provided, it is a type of software license rather than a functional software category. There is other prominent type of software, open source software, for which the human-readable source code is made available under a copyright license (or arrangement such as the public domain) that meets the Open Source Definition. This permits users to use, change, and improve the software, and to redistribute it in modified or unmodified form. It is often developed in a public, collaborative manner. Open source software is the most prominent example of open source development and often compared to user generated content. Freeware is an effective middle ground between commercial software and open source software, allowing authors to contribute something for the benefit of the community, while at the same time allowing them to retain control of the source code and preserve its business potential. As your personal experiences, could you please identify two kinds of freeware? Please note that freeware is different from shareware, where the user is obligated to pay (e.g. after some trial period or for additional functionality). The only criterion for being classified as freeware is that the software must be fully functional for an unlimited time with no monetary cost. The software license may impose one or more other restrictions on the type of use including personal use, individual use, non-profit use, non-commercial use, academic use, commercial use or any combination of these. Everything created with the freeware programs can be distributed at no cost (for example graphic, documents, or sounds made by user). (40%)