國立成功大學
111學年度碩士班招生考試試題

編　號：122

系　所：工程科學系

科　目：計算機概論

日　期：0220

節　次：第 2 節

備　註：不可使用計算機

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※ 考生請注意：本試題不可使用計算機。 請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Programs of high-level programming languages must be translated into machine languages before they can be executed in different computer platforms. What are the major types of **software** that can translate a high-level language program into an executable binary file or can execute the high-level language program directly in a computer platform? Please describe their major differences. (20%)

2. You may often hear of **cache memory** in hardware devices somewhere and sometime in your computer science studies. (20%)

   a. Please describe what is a **cache memory**? What are its major functionalities?

   b. What are **cache memories** usually made of? What are the major differences between cache memories and ordinary DDR main memories?

3. The **URL (Uniform Resource Locator)** is used for the **World Wide Web** resources addressing. A formal URL may contain up to 7 components. Please invent an URL with 7 components, identify the name of each component, and give a full description on the purpose of each component. (20%)

4. Computer system backup is vital for system recovery from various disasters, like fires, earthquakes, and crashes. Popular methods include either **local** or **remote** system backup. If you are supervising some system servers, please make and describe your plans for backing up the server systems **locally** and **remotely**. (20%)

5. One's **complement** scheme was once used in computer systems for arithmetic operations of signed integer numbers. But **two's complement** becomes the most common method of representing signed integers on computers today. (20%)

   a. Copy the table below and fill in the decimal values corresponding to the bits pattern of the left most column in the table.

Bits (one byte)	Unsigned Value	One's Complement	Two's Complement
0000 0000			
0000 0010			
0111 1111			
1000 0000			
1000 0010			
1111 1111			

   b. According to the results above, explain why the range of the two-byte integers used in the computer is -32768 to 32767 when two's complement scheme is used?