

淡江大學 108 學年度日間部寒假轉學生招生考試試題

系別：資訊工程學系三年級

科目：程式語言

30-1

考試日期：1月13日(星期一) 第2節

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本試題雙面印刷

1. (40%) Short Answer.

- List three primary data type and two derived data type.
- Describe the advantages of using the char pointers of array to store strings.
- Given an example to explain what is "pointer to point" in C?
- Given function prototype as `int compDouble(double, double)`. Please declare a function pointer to store the function.
- Write the two functions that you should use when using dynamic memory allocation.
- Write three main properties of object-oriented programming.
- Given example to explain what "Exception handling" is.
- Describe what are the differences between "abstract class" and "interface"?

2. (20%) Write a C program that can be used to identify whether a given number is palindrome or not.

Example 1	Example 2
Input: 45554	Input: 12345
Output: 45554 is a palindrome.	Output: 12345 is not an apalindrome.

3. (20%) Write a C program that can find the maximum cycle length between the given two integers based on the following Algorithm I. Given the input 22, the following sequence of numbers will be printed 22 11 34 17 52 26 13 40 20 10 5 16 8 4 2 1. The cycle length of the integer 22 is 16. Thus, if the two given integers are 1 and 10, then the maximum cycle length from integer 1 to 10 is 20.

Algorithm I

- input n
- print n
- if $n = 1$ then STOP
- if n is odd then $n \leftarrow 3n + 1$
- else $n \leftarrow n/2$
- GOTO Step 2

背面尚有試題

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4. (20%) Write a C program to draw a hollow square based on given the parameter *edgeLength*. For example, if the *edgeLength* is 5, the following hollow square will be generated.

```
*****  
*      *  
*      *  
*      *  
*****
```