

# 淡江大學 104 學年度日間部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

考試日期：7月26日(星期日) 第4節

本試題共 6 大題， P1 頁共 3 頁

## 1. (20%) Short Answers (簡答題)

- In C, there are two types of parameter passing (參數傳遞). Discuss these two types each with an example.
- In C, consider the variable declaration `int d[10]` and `int *e[10]`. Describe about what kind of data are stored in array `d` and array `e`.
- Give three main features in object-oriented programming. (描述物件導向設計三個主要特性)
- List three names of the mainstream objected-oriented programming languages. (列出三種主流物件導向程式語言的名稱)

## 2. (10%) What does the function `mystery1` do? If $n = 2468$ is passed to `mystery1`, what is the return value?

```
int mystery1( int n ){
    int r = 0, divisor = 1000, multiplier = 1;
    while ( n > 10 ) {
        if ( n >= divisor ) {
            r += n / divisor * multiplier;
            n %= divisor;
            divisor /= 10;
            multiplier *= 10;
        } else divisor /= 10;
    }
    r += n * multiplier;
    return r;
}
```

## 3. (30%) Write a function $sum(1, n) = 1+2+3+\dots+(n-1)+n$ using

- Iteration using “for” loop (10%)
- Iteration using “while” loop (10%)
- Recursion (需要用遞迴) (10%)

本試題雙面印刷

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系別：資訊工程學系三年級

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49-2

考試日期：7 月 26 日(星期日) 第 4 節

本試題共 6 大題， P2 頁

4. (20%) Modify the following code to produce the output shown below. Use proper indentation techniques. You may not make any changes other than inserting braces (修改下面的程式碼，以便能夠達成(a)~(e)的輸出，修改僅能以加大括弧方式為之，如果無法產生所要的輸出，請說明無法修改).

```
if ( y == 9)
if (x == 4)
printf("@@@@\n");
else
printf("#####\n");
printf("$$$$$\n");
printf("&&&&\n");
```

- (a) Assume  $x = 4$  and  $y = 9$ ,  
the following output is produced.

```
@@@@@
$$$$$
&&&&&
```

- (b) Assume  $x = 4$  and  $y = 9$ ,  
the following output is produced.

```
@@@@@
```

- (c) Assume  $x = 4$  and  $y = 9$ ,  
the following output is produced.

```
@@@@@
&&&&&
```

- (d) Assume  $x = 4$  and  $y = 7$ ,  
the following output is produced.

```
#####
$$$$$
&&&&&
```

- (e) Assume  $x = 4$  and  $y = 7$ , output nothing.

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49-3

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5. (10%) Recursion Trace: Show the output when the function `Func(72, 108)` is called.

```
#include <stdio.h>
#include <stdlib.h>
int Func(int a, int b){
    printf("%d %d\n", a, b);
    if(a==0) return b;
    else return Func(b%a, a);
}
int main(){
    Func(72, 108);
    return 0;
}
```

6. (10%) Write a program to input an integer and print if it is odd/even and prime/nonprime.

1<sup>st</sup> run:

Enter an integers: 43

43 is odd; prime. // 43 是奇數，質數

2<sup>nd</sup> run:

Enter an integers: 78

78 is even; nonprime. // 78 是偶數，非質數