

# 淡江大學 106 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

34-1

考試日期：1月6日(星期六) 第2節

本試題共 6 大題， 2 頁

1. (20%) Short Answers.

- (a) What are the three main features in object-oriented programming?
- (b) Android apps are written in what language? iOS apps are written in what language?
- (c) Describe what the following statement does.  
`pLotto = (Lotto *)malloc(sizeof(struct Lotto));`
- (d) Give an example to describe what is "call by-value", and what is call-by-reference?

2. (30%) Implement the function  $\text{sum}(n) = 1+2+3+\dots+(n-1)+n$ , using

- (a) for loop
- (b) while loop
- (c) recursion (遞迴)

3. (10%) What does the function `mystery` do? If  $n = 1234$  is passed to `mystery`, what is the return value?

```
int mystery(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;
}
```

4. (10%) Complete the function `swap(A, B)` below that can exchange the values of A and B.

```
void swap(int *pA, int *pB){
    // give your code here
}

int main(){
    int A=30, B=50;
    swap(&A, &B);
    printf("A=%d, B=%d\n", A, B); // get the result: A=50, B=30
}
```

# 淡江大學 106 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

34-2

考試日期：1月6日(星期六) 第2節

本試題共 6 大題， 2 頁

5. (10%) Write a program that can draw a vertical triangle as below.

Enter height: 5

Enter type: 1

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

6. (20%) Complete the code given below that can randomly generate five dates as shown in the output. The range for year is from 2017 to 2018; month is from 1 to 12; day is from 1 to 30; hour is from 1 to 23, minute is from 1 to 60; second is from 1 to 60.

```
#define MAX 5  
struct Date{  
    int year, month, day;  
    int hour, minute, second;  
}  
void prDates(Date dates[], int N){  
  
}  
int main(){  
    srand(time(NULL));  
    Date dates[MAX];  
    for(int i=0;i<MAX;i++){  
        // input data randomly  
    }  
    prDates(dates,MAX);  
    return 0;  
}
```

// Screen output 亂數輸出 5 筆

2017/03/15 18:30:30

2018/11/30 07:20:10

2017/12/12 18:10:00

2017/06/08 12:15:45

2018/01/10 11:27:30