

八十六學年度 工業工程系(所)工業工程組碩士班研究生入學考試

科目 計算機概論 科號 3303 共 3 頁第 1 頁 *請在試卷【答案卷】內作答

- What will happen if you assign a value to an element of an array whose subscript exceeds the size of the array? (多選) (5%)
 - 0 will be assigned to that element.
 - C (language) will detect such error.
 - Other data array may be overwritten.
 - Possible system malfunction.
 - No effect of this assignment.
- A do ... while loop is more suitable than while loop when (3%)
 - the body of the loop will never be executed.
 - the body of the loop will be executed at least once.
 - the body of the loop will be executed forever.
 - the body of the loop must be skipped.
- Describe what the following C programs/functions do? Use concise mathematical expression to answer the question, if you can. (20%)

(a)

```
#include <stdio.h>
#define n 10
main()
{
    long s, i, t;
    for (s=0, t=1, i=1; i <= n, i++)
    {
        t *= i;
        s += t;
    }
    printf("sum = %d\n", s);
}
```

(b)

```
int guava(int a, int b)
{
    if (a%b == -0)
        return (h);
    else
        return (guava(h, a%b));
}
```

八十六學年度 工業工程 系(所) 工業工程 組碩士班研究生入學考試

科目 算機概論 科號 3303 共 3 頁第 2 頁 *請在試卷【答案卷】內作答

(c)

```
int peach(int a, int b)
{
    if ((b == 0) || (a == b))
        return(1);
    else
        return(peach(a-1, b) + peach(a-1, b-1));
}
```

(d)

```
#include <stdio.h>
int a[10] = {1, 22, 23, 25, 37, 45, 48, 51, 52, 55};
main()
{
    int item;
    int lemon(int *, int, int, int);
    scanf("%d", &item);
    printf("position=%5d\n", lemon(a, item, 0, 9));
}

int lemon(int a[], int item, int lower, int upper)
{
    int mid;
    if (lower <= upper)
    {
        mid = (lower + upper) / 2;
        if (a[mid] == item)
            return(mid);
        else
            if (a[mid] > item)
                return(lemon(a, item, lower, mid-1));
            else
                return(lemon(a, item, mid+1, upper));
    }
    else
        return (-1);
}
```

八十六學年度 工業工程學系(所) 工業工程組碩士班研究生入學考試

科目 計算機概論 科號 3303 共 3 頁第 3 頁 *請在試卷【答案卷】內作答

4. If $x = 10$, find out the results of the following statements : (12%)
 - (a) $x = x + (x += 5)$
 - (b) $x = (int)4.2 + 2.7 + x$
 - (c) $x = (x + 2) / 2 * 3$
5. (a) Explain and compare SRAM and DRAM. (5%)
 (b) Explain and compare RISC and CISC. (5%)
6. What are parallel and serial interfaces? Compare the advantages and disadvantages of the two. (8%)
7. Internet 的功能除了眾所皆知的電子佈告欄(BBS)及電子郵件(E-mail)外,尚有那些功能? (5%)
8. 試述發展一個資訊系統之生命週期(Life cycle)。 (8%)
9. 請解釋在UNIX的多作業環境下,所謂Swapping及Paging的觀念。 (7%)
10. 下列程式是使用所謂 Call-by-value 方式呼叫函示,所以程式執行完畢後, x, y 值仍未改變,如果希望執行完畢後 x, y 值互換,如何改寫下列程式? (10%)


```
void main()
{
    int x=5, y=10;
    swap(x, y);
    printf("x = %d, y = %d", x, y);
}

swap(i, j)
int i, j;
{
    int temp;

    temp = i;
    i = j;
    j = temp;
}
```
11. 以 C 或 Fortran 語言寫一 function, 可以用 recursive 方式解 $f(x, n) = 1 + x + x^2 + \dots + x^n$; 並繪出解法的流程圖。 (12%)