

國立中央大學94學年度碩士班考試入學試題卷 共 2 頁 第 1 頁
所別：網路學習科技研究所碩士班 科目：計算機概論

1. (15%) What are the possible uses or advantages of applying the following technologies in technology enhanced learning (e-learning)?

- a. (3%) Web
- b. (3%) Database
- c. (3%) Wireless and mobile technologies
- d. (3%) Artificial intelligence
- e. (3%) Multimedia

2. (15%) Explain and give an example of the following terms:

- a. (3%) CAI (Computer Assisted Instruction)
- b. (3%) Web-log (BLog)
- c. (3%) Wiki
- d. (3%) ITS (Intelligent Tutoring Systems)
- e. (3%) CSCL(Computer supported collaborative learning)

3. (15%) The following coding will generate errors when it is compiled. Why? Please correct the coding. (Hint: polymorphism)

```
import javax.swing.JApplet;
public class myApplet extends JApplet
{
    public int foo(double x)
    {
        return x * x;
    }
    public double foo(double y)
    {
        return y * y;
    }
}
```

4. (25%) Given a binary tree T,

- a. (8%) Write an algorithm(in subroutine form)that counts the number of nodes in T.
- b. (8%) Write an algorithm(in subroutine form)that counts the number of leaves in T.
- c. (9%) Using the above two subroutine, write an algorithm that determines if T is a complete binary tree.

5. (30%) What will be printed when the following program is executed ?

```
#include <stdio.h>
void a(void); /* function prototype */
void b(void); /* function prototype */
void c(void); /* function prototype */
int x = 10; /* global variable */
```

注意：背面有試題

```
int main()
{
    int x =7; /* local variable to main */
    printf("local x in outer scope of main is %d\n",x);
    {
        /* start new scope */
        int x =4;
        printf("local x in inner scope of main is %d\n",x);
    } /* end new scope */
    printf("local x in outer scope of main is %d\n",x);
    a(); /* a has automatic local x */
    b(); /* b has static local x */
    c(); /* c uses global x */
    a();
    b();
    c();
    printf("local x in main is %d\n",x);
    return 0;}

void a(void)
{
    int x =20; /* initialized each time a is called */
    printf("\nlocal x in a is %d after entering a\n",x);
    ++x;
    printf("local x in a is %d before exiting a\n",x);
}

void b(void)
{
    static int x =20; /* static initialization only*/
    printf("\nlocal static x is %d on entering b\n",x);
    ++x;
    printf("local static x is %d on exiting b\n",x);
}

void c(void)
{
    printf("\nglobal x is %d on entering c\n",x);
    ++x;
    printf("global x is %d on exiting c\n",x);
}
```