Embedded Linux 行動應用加值開發就業班

C 程式&資料結構　期中測驗

姓名：

筆試 60%:
上機考試 40%:
時間: 120 分鐘

1. 寫出主程式的輸出爲何?

```
#include <stdio.h>
int main()
{   unsigned char a=38,b=49;
    a ^= b;   b ^= a;   a ^= b;
  printf("a=%d , b=%d\n", a,b );

return 0;
}
```

2. 請寫出陣列 a 的內容爲何?

```
void foo(int [][3] );
main()
{
int a [3][3]= { { 1,2,3} , { 4,5,6},{7,8,9}};
foo(a);
/*程式執行至此，請問陣列a的內容爲何?*/
}
void foo( int b[][3])
{
++ b;
b[1][1] =100;
}
```

3. 寫一行 C 程式碼將變數 X (32bit)的 bit 31~29 的值清除爲 0 . (bit 0~bit28 保持原來的值)

4. 寫出主程式的輸出爲何?

```
void f1(int *, int);
void(*p[2]) ( int *, int);
void f1( int* p , int q)
{
int tmp;
tmp =*p;
*p = q;
q= tmp;
}

int main()
{
int a;
int b;

p[0] = p[1] = f1;
a=5; b=10;
p[0](&a , b);
printf("%d\t %d\t" , a ,b);
p[1](&a , b);
printf("%d\t %d\t" , a ,b);
}
```

5. 寫出主程式的輸出爲何?

```
void foo(int );

main()
{
  int a=3;
  foo(a);
}


void foo(int n)
{
  if(n>0)
  {
    foo(--n);
    printf("%d" , n);
    foo(n--);
    }
}
```

6. 寫出主程式的輸出爲何?

```
#include <stdio.h>

void foo(int *a, int r, int n)
   {

        int k=a[r];
        int j;
        for(j=2*r+1; j<=n; j=j*2+1)
        {
            if (j<n)
                if (a[j+1]>a[j])  j++;
            if (k>=a[j])  break;
            a[(j-1)/2]=a[j];

         }
         a[(j-1)/2]=k;
 }

int main(void)
 {
        int i,j;
        int b[10]={4,7,1,5,15,12,9,6,3,8};
        int n=10;
        n=n-1;
        for(i=(n-1)/2; i>=0; i--)
            foo(b, i,n );

        for(j=0; j<10; j++)
            printf("%d\t",b[j]);

        printf("\n");
}
```

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7. 寫一個函式可將陣列的值輸出，輸出方式爲 bit 爲 1 時輸出'*',否則輸出空白字元' '，每處理完一個 byte 輸出換行'\n'

```
static unsigned char font[]=
{
        0x38,
        0x6c,
        0xc6,
        0xfe,
        0xc6,
        0xc6,
        0xc6,
        0x00
};
```

8. Give two methods to implement a Stack. Also discuss their pros and cons.
Then write a C/C++ or Java program for one of those

9. Give a Non-recursive version of binary search.
Then write a C/C++ or Java program for one of those

10. Write a routine that rotates the bit pattern for the character *c* left *b* bits.

unsigned char rol (unsigned char *c*, unsigned char b);

ex. k=rol(0xa3,2); k→0x8e