

計算機程式二 111 學年度第 2 學期小考 2 試題

系級：_____ 學號：_____ 姓名：_____

1. 下列程式輸出結果(The output for void f1()):

(1) Line 1: 37854 (2) Line 2: pROgAMER (3) Line 3: sEEyA

```
void f11(char *s) {
    while(*s != '\0') {
        if(*s >= 'a' && *s <= 'z') *s -= 32;           //小寫轉大寫
        else if(*s >= 'A' && *s <= 'Z') *s += 32;       //大寫轉小寫
        else if((*s - '0') % 2) *s += 1;
        else *s -= 1;
        s++;}
}

void f12(char *s, char *s1, int size) {
    for(int i = 0; i < size; i++) *(s++) = *(s1++);}

void f1() {
    char str[3][15] = {"48763", "ProGamer", "Baboon"};
    f12(str[2], "SeeYa", 15);
    for(int i = 0; i < 3; i++) f11(str[i]);
    for(int i = 0; i < 3; i++) printf("%s\n", str[i]);
}
```

2. 下列程式輸出結果(The output for void f2()):

(1) Line 1: 7, 4 (2) Line 2: 0
(3) Line 3: 4 (4) Line 4: 75, 36

```
void f21(int *s, int p[][3]) {
    *s = p[1][2];
    *(&s) = p[1][1];}

int f22(int a[], int n) {
    if (n > 1) {
        printf("%d\n", a[n]);
        return f22(a, n-1) + a[n];}
    else return 0;
}

int f23(int m, int n) {
    if (m % n == 0) return n;
    else printf("%d, %d\n", m, n);
    return f23(n, m % n);
}

void f2() {
    int result;
    int b[] = {2, 3, 4, 1, 0, 5};
    int a[2][3] = {5, 3, 2, 1, 4, 7}, *p;
    p = &b[2];
    f21(p, a);
    printf("%d, %d\n", b[2], b[3]);
    p = &b[1];
    result = f22(p, b[1]);
    f23(75, p[2] + 32);
}
```

3. 下列程式輸出結果(The output for void f3()):

(1) Line 1: 12 (2) Line 2: 8
(3) Line 3: 19 (4) Line 4: 4

```
void f31(int **pp, int **qq, int a[], int *p) {
    int **rr = qq;
    a[1] = (**rr) + (*(a+2));
    printf("%d\n", a[1]);           // (1)
    *pp = p + 1;
    *rr = *pp + 1;
    printf("%d\n", *(**rr+3));      // (2)
    *(a+1) += (**pp) + ((*pp-5) + *(p+1));
    printf("%d\n", a[1]);           // (3)
    *qq = p+1;
    *((**qq)+1) = (**rr) + (**pp);
    printf("%d\n", **qq);           // (4)
}

void f3() {
    int a[] = {3, 4, 5, 6, 7, 8, 9};
    int *p = a, *q = a+2;
    int **pp = &p;
    f31(pp, &q, a+2, p);
}
```

4. (1) *i (2) left >= right (3) j--
(4) data[i] > target (5) i < j (6) &data[left]

請完成以下程式碼，使執行結果符合輸出。(Please complete the empty space to make the execution result match the output.)

The output of void f4(): 78 67 55 51 42 38 29

```
void swap(int* i, int* j) {
    int temp = _____;           // (1)
    *i = *j;
    *j = temp;
}

void QuickSort (int data[], int left, int right) {
    int i, j, target;
    if ( _____ ) return;         // (2)
    i = left;
    j = right;
    target = data[left];
    while (i != j) {
        while ((data[j] <= target) && (i < j)) _____; // (3)
        while (( _____ ) && (i < j)) i++;           // (4)
        if( _____ ) swap (&data[i], &data[j]);    // (5)
    }
    swap( _____ , &data[i]);           // (6)
    QuickSort(data, left, i-1);
    QuickSort(data, i+1, right);
}

void f4() {
    int i, X[7] = {78, 42, 38, 55, 67, 51, 29};
    QuickSort(X, 0, 6);
    for (i = 0; i < 7; i++) printf("%d ", X[i]);
}
```

5. (1) am (2) am <= an (3) A[am] <= B[bm]
 (4) m < n (5) (m + n) / 2 (6) mid+1

請完成以下程式碼，使執行結果符合輸出。(Please complete the empty space to make the execution result match the output.)

The output of void f5(): 21 33 46 54 66 69 77

```
void merge(int C[], int A[], int am, int an, int B[], int bm, int bn){
    int k = _____; // (1)
    while (( _____ ) && (bm <= bn)) { // (2)
        if ( _____ ) C[k++] = A[am++]; // (3)
        else C[k++] = B[bm++]; }
    while (am<=an) C[k++] = A[am++];
    while (bm<=bn) C[k++] = B[bm++];
}
```

```
void mergeSort(int a[], int m, int n) {
    int mid = 0, C[20];
    if ( _____ ) { // (4)
        mid = _____; // (5)
        mergeSort(a, m, mid);
        mergeSort(a, _____, n); // (6)
        merge(C, a, m, mid, a, mid+1, n);
        for (int i = m; i <= n; i++) a[i] = C[i];
    }
}
```

```
void f5() {
    int a[] = {46, 21, 77, 69, 66, 54, 33};
    mergeSort(a, 0, 6);
    for (int i = 0; i < 7; i++) printf("%d ", a[i]);
}
```

6. (1) i (2) > (3) a[j-1]

請完成以下程式碼，使執行結果符合輸出。(Please complete the empty space to make the execution result match the output.)

The output of void f6():

Line 1: 6 8 2 5 4 7

Line 2: 2 6 8 5 4 7

Line 3: 2 5 6 8 4 7

Line 4: 2 4 5 6 8 7

Line 5: 2 4 5 6 7 8

```
void insertionSort(int a[], int n) {
    int target = 0, i = 0, j = 0, k = 0;
    for (i = 1; i < n; i++) {
        target = a[i];
        for (j = (1); ( a[j-1] > target) && (j (2) 0); j--)
            a[j] = (3);
        a[j] = target;
        for (k = 0; k < n; k++)
            printf("%d ", a[k]);
        printf("\n");
    }
}

void f6() {
    int a[] = {6, 8, 2, 5, 4, 7};
    insertionSort(a, 6);
}
```

7. 下列程式輸出結果(The output for void f7()):

(1) Line 1: 9, 12 (2) Line 2: 21, 12
 (3) Line 3: 21, 5 (4) Line 4: 2, 12

```
void f7(int *p, int *q, int *r) {
    int **pp = &p, **qq = &q, **rr = &r;
    q = r; r = p; *p += 2; *q = *r + 3;
    printf("%d, %d\n", *p, *q);
    qq = &p; *rr = q; **qq = *r + **pp;
    printf("%d, %d\n", **qq, **rr);
}

void f72(int a[], int p1, int *p2, int *p3) {
    a[0] = 3; p1 = 1; *p2 = 2; p3 = a+3;
}

void f7() {
    int a=7, b=5, c=3, arr[] = {1, 3, 5, 7, 9, 11};
    f71(&a, &b, &c);
    printf("%d, %d\n", a, b);
    f72(arr, a, &b, &c);
    printf("%d, %d\n", b, c);
}
```

8. 下列程式輸出結果(The output for void f8()):

(1) Line 1: 2, 5 (2) Line 2: 3, 5
 (3) Line 3: 40, 7 (4) Line 4: 9, 3

```
void f8() {
    int i = 2, sum = 3, a[] = {7,8,9,10,9,8,7,6,5,4,3};
    int *q = a+7, *p = &i;
    printf("%d, %d\n", (*p)++, *(++q)); // (1)
    printf("%d, %d\n", *p, *q); // (2)
    for (sum = 0, p = a+5; p > a; p--)
        sum += *(p+2);
    printf("%d, %d\n", sum, *p); // (3)
    for (i = 0; i < 9; i++) a[i] = i;
    p = q = a;
    i += *(p++);
    i -= (*q)++;
    printf("%d, %d\n", i, a[10]); // (4)
}
```

9. 使用選擇排序法將下方序列由小至大排序，請寫下排序過程中每一次判斷交換結果(Using selection sort to sort the following sequence from small to large, write down the result of each exchange in the sorting progress.)

序列: {6, 8, 2, 5, 4, 7, 9, 1, 6, 3}

1, 8, 2, 5, 4, 7, 9, 6, 6, 3 -> 1, 2, 8, 5, 4, 7, 9, 6, 6, 3 ->
 1, 2, 3, 5, 4, 7, 9, 6, 6, 8 -> 1, 2, 3, 4, 5, 7, 9, 6, 6, 8 ->
 1, 2, 3, 4, 5, 7, 9, 6, 6, 8 -> 1, 2, 3, 4, 5, 6, 9, 7, 6, 8 ->
 1, 2, 3, 4, 5, 6, 6, 7, 9, 8 -> 1, 2, 3, 4, 5, 6, 6, 7, 9, 8 ->
 1, 2, 3, 4, 5, 6, 6, 7, 8, 9 -> 1, 2, 3, 4, 5, 6, 6, 7, 8, 9

10. 請針對計算機程式設計課程，提出目前學習上較有問題的部分，並說明如何解決問題。(30字含以上才計分) For the computer programming course, please point the more confusing section in the current study. Write down the problem and how to improve it. (30 words or more will be scored)