CS1010E - Problem solving with arrays

Assessment Title :

Problem solving with arrays

Number of Attempts :

1 out of unlimited

Duration :

2m 50s

Start Time :

24-Nov-2016 12:31 PM

Total Marks :

0 out of 10

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Section 1

1) Given the following function:

```
void p(int x[], int n) {
   int i, j, k;
   for (i = 0; i < n - 1; i++) {
      k = i;
      for (j = i + 1; j < n; j++) {
         if (x[k] < x[j]) {
            k = j;
         }
      }
      x[k] = x[i];
      x[i] = x[k];
   }
   return;
}
```

What is the output of the following code fragment?

```
int x[4] = {2, 4, 1, 3};

p(x, 4);
printf("%d %d %d %d\n", x[0], x[1], x[2], x[3]);
```

- 1 2 3 4
- 2 2 1 1
- 2 4 4 4
- 4 3 2 1

Correct Answer :	2 2 1 1
Your Marks :	0 out of 1

2) What is the output of the following program?

```
#include <stdio.h>
#include <stdbool.h>

int f(int a[], int n);

int main(void) {
   int a[5] = {1, 0, 4, 2, 3};

   printf("%d\n", f(a, 5));
   return 0;
}

int f(int a[], int n) {
   int i, t, y = 0;
   bool x;

   do {
      x = false;
      for (i = 0; i < n - 1; i++) {
         if (a[i] < a[i + 1]) {
            t = a[i];
            a[i] = a[i + 1];
            a[i + 1] = t;
            x = true;
         }
      }
      y++;
   } while (x);
   return y;
}
```

- 1
- 2
- 3
- 4

Correct Answer :	4
Your Marks :	0 out of 1

3) What is the output of the following program?

```
#include <stdio.h>

int f(int a[], int n, int x);

int main(void) {
   int arr[5] = {1, 3, 5, 7, 9};

   printf("%d %d %d\n", f(arr, 5, 8), f(arr, 5, 9), f(arr, 5, 10));
   return 0;
}

int f(int a[], int n, int x) {
   int i = 0;

   while (i < n && a[i] < x) {
      i++;
   }
   return i;
}
```

- 3 3 4
- 3 4 4
- 4 4 5
- 4 5 5

Correct Answer :	4 4 5
Your Marks :	0 out of 1

4) Given the following function:

```
int f(int x[], int n, int value) {
   int top = 0, bottom, mid, index = -1;

   bottom = n - 1;
   while (top <= bottom && index == -1) {
      mid = (top + bottom) / 2;
      if (x[mid] == value) {
         index = mid;
      } else if (x[mid] > value) {
         bottom = mid - 1;
      } else {
         top = mid + 1;
      }
   }
   return index;
}
```

Given the following array definition:

```
int x[8] = {1, 2, 3, 4, 5, 6, 7, 8};
```

Among the five function calls given below, which of them require the most number of iterations?

i. f(x, 8, 1);
ii. f(x, 8, 3);
iii. f(x, 8, 5);
iv. f(x, 8, 7);
v. f(x, 8, 8);

- i, ii, iii and iv only.
- i and v only.
- ii and iv only.
- v only.

Correct Answer :	v only.
Your Marks :	0 out of 1

5) What is the output of the following program?

```
#include <stdio.h>

int f(int x[], int n, int value);

int main(void) {
   int a[10] = {1, 3, 5, 7, 9, 11, 13, 15, 17, 19};

   printf("%d %d %d\n", f(a, 10, 18), f(a, 10, 19), f(a, 10, 20));
   return 0;
}

int f(int x[], int n, int value) {
   int top = 0, bottom, mid, index = -1;
   int i = 0;

   bottom = n - 1;
   while (top <= bottom && index == -1) {
      mid = (top + bottom) / 2;
      if (x[mid] == value) {
         index = mid;
      } else if (x[mid] > value) {
         bottom = mid - 1;
      } else {
         top = mid + 1;
      }
      i++;
   }
   return i;
}
```

- 4 3 4
- 4 4 4
- 5 4 5

5 5 5

Correct Answer :	4 4 4
Your Marks :	0 out of 1

6) What is the output of the following program fragment?

```
int a[5] = {2, 4, 1, 3, 0};
int b[5] = {0, 1, 2, 3, 4};
int i, t;

for (i = 0; i < 5; i++) {
   t = b[i];
   b[i] = b[a[i]];
   b[a[i]] = t;
}

for (i = 0; i < 5; i++) {
   printf("%d ", b[i]);
}
printf("\n");
```

0 3 1 4 2

1 0 4 3 2

2 0 4 3 1

2 4 1 3 0

Correct Answer :	1 0 4 3 2
Your Marks :	0 out of 1

7) What is the output of the following program fragment?

```
int x[3][3] = {{4, 0, 8}, {5, 7, 6}, {1, 2, 3}};
int previ, prevj, i = 0, j = 0;

do {
   previ = i;
   prevj = j;
   i = x[previ][prevj] / 3;
   j = x[previ][prevj] % 3;
   printf("%d ", x[previ][prevj]);
} while (x[i][j] != x[0][0]);
printf("\n");
```

4 0 8 5 7 6 1 2 3

4 5 1 0 7 2 8 6 3

4 7 2 8 3 5 6 1 0

7 2 8 3 5 6 1 0 4

Correct Answer :	4 7 2 8 3 5 6 1 0
Your Marks :	0 out of 1

8) What is the output of the following program?

```
#include <stdio.h>

int f(int a[][4]);

int main(void) {
   int x[4][4] = {{1, 2, 3, 4},
                  {5, 6, 7, 8},
                  {9, 10, 11, 12},
                  {13, 14, 15, 16}};
   printf("%d\n", f(x));
   return 0;
}

int f(int a[][4]) {
   int i, j, k = 0;
   for (i = 0; i < 4; i++) {
      for (j = 0; j < i; j++) {
         k = k + a[j][i];
      }
   }
   return k;
}
```

- 36
- 66
- 70
- 100

Correct Answer :	36
Your Marks :	0 out of 1

9) What does the function f compute?

```
int f(int x[][4]) {
   int i, j, n = 0;
   for (i = 0; i < 4; i++) {
      for (j = 0; j < 4; j++) {
         if (x[i][j]%2 > 0) {
            n = n + x[i][j];
         }
      }
   }
   return n;
}
```

- Returns the sum of all the numbers in the array.
- Returns the sum of all the odd numbers in the array.
- Returns the sum of all the even numbers in the array.
- Returns the sum of all alternate numbers in the array.

Correct Answer :	Returns the sum of all the odd numbers in the array.
Your Marks :	0 out of 1

10) What is the output of the following program?

```
#include <stdio.h>
int f(int x[][4]);

int main(void) {
   int a[4][4] = {{1, 0, -1}};
   printf("%d\n", f(a));
   return 0;
}

int f(int x[][4]) {
   int i, j, n = 0;

   for (i = 0; i < 4; i++) {
      for (j = 0; j < 4; j++) {
         if (x[i][j] == 0) {
            n++;
         }
      }
   }
   return n;
}
```

- 1
- 2
- 14
- 15

Correct Answer :	14
Your Marks :	0 out of 1

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