

CS101 – Computer Programming
Quiz for Monday Batch – 22 September 2014

Note: Both the questions have single correct answer

Q1. Consider the following functions for sorting array 'A' in descending order using Selection sort. Assume 'n' as the length of an array 'A' containing 7 elements(i.e. N=7). If the elements of the array are A={1,4,5,2,3,6,8}, how many swaps are performed by the function 'swap' if the function 'selectionsort' is called from the main program as selectionsort(A,n).

```
int findIndexOfMax(int A[],int start, int end){
    int i, currMaxIndex = start;
    for(i = start; i< end; i++){
        if(A[i] >= A[currMaxIndex]) { currMaxIndex = i; }
    }
    return currMaxIndex;
}

void swap(int A[], int index1, int index2){
    if(index1!=index2){
        int temp = A[index1];
        A[index1] = A[index2];
        A[index2] = temp;
    }
}

void selectionsort(int A[100],int n){
    int currTop, currMaxIndex;
    for(currTop = 0; currTop < n-1; currTop++) {
        currMaxIndex = findIndexOfMax(A,currTop,n);
        swap(A,currTop,currMaxIndex);
    }
}
```

Options

- A. 3
- B. 4
- C. 5
- D. 6
- E. None of the choices

Q2. Consider the following part of selection sort program written by a novice programmer to sort the elements of an array 'A' in ascending order. Assume the initial elements in the array 'A' to be A={8,6,4,2,3,5,7} and the call from the main program is of the form selectionsort(A,7). What will be the value of the array A after the function 'selectionsort' returns the control to the main program?

```
int findIndexOfMax(int A[],int start, int end){
    int i, currMaxIndex = start;
    for(i = start; i< end; i++){
        if(A[i] < A[currMaxIndex]) { currMaxIndex = i; }
    }
}
```

```

    return currMaxIndex;
}

void swap(int A[], int index1, int index2){
    int temp = A[index1];
    A[index1] = A[index2];
    A[index2] = temp;
}

void selectionsort(int A[100],int n){
    int currTop, currMaxIndex;
    for(currTop = 0; currTop < n-2; currTop++){
        currMaxIndex = findIndexOfMax(A,currTop,n);
        swap(A,currTop,currMaxIndex);
    }
}

```

- A. 2 6 4 8 3 5 7
- B. 2 3 4 8 6 5 7
- C. 2 3 5 8 6 4 7
- D. 2 3 4 5 6 8 7
- E. None of the choices