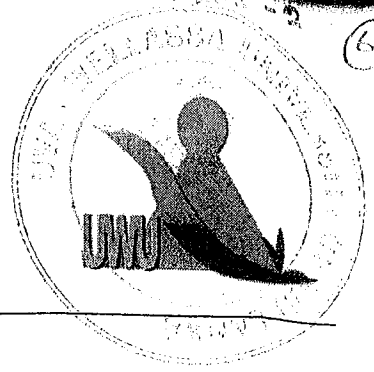


09 - END - CST 100

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Uva Wellassa University, Sri Lanka
End Semester Examination – June 2009
CST 202-2 Data Structures & Algorithms
Time: Two (02) hour



Total 05 Questions
Answer all questions

- Q1. Describe advantages and disadvantages of following data structures.
- a.) Array [04 marks]
 - b.) Ordered Array [04 marks]
 - c.) Queue [04 marks]
 - d.) Stack [04 marks]
 - e.) Linked List [04 marks]
- Q2.
- a.) Write down the sorting methods? [03 marks]
 - b.) Describe Bubble sort with a suitable example. [07 marks]
 - d.) Write an algorithm to sort an array using Bubble sort method. [10 marks]
- Q3.
- a.) What are differences between stacks and queues? [04 marks]
 - b.) Write an algorithm to delete an element from a stack. [08 marks]
 - c.) Write algorithm to delete an element from a queue. [08 marks]
- Q4.
- a.) What are differences between arrays and linked lists? [04 marks]
 - b.) Write differences between double-ended and doubly Linked list. [06 marks]
 - c.) Write algorithm to remove and insert an element from doubly Linked list. [10 marks]
- Q5.
- a.) Find errors with this and correct them.

```
public boolean delete(long value){
    int j;
    for(j=0; j<nElems; j++)
        if( value == a[j] )
            break;
    if(j==nElems)
        return false;
    else {
        for(int k=j; k<nElems; k++)
            a[k] = a[k-1];
        nElems--;
        return true;
    }
}
```

[10 marks]

b.) Write the output of the following programme.

```
class LowArray {
    private static long[] a;
    public LowArray(int size) {
        a = new long[size];
    }
    public void setElem(int index, long value) {
        a[index] = value;
    }
    public long getElem(int index) {
        return a[index];
    }
}
```

```
class LowArrayApp {
    public static void main(String[] args) {
        LowArray arr;
        arr = new LowArray(100);
        int nElems = 0;
        int j;
        arr.setElem(0, 77);
        arr.setElem(1, 99);
        arr.setElem(2, 44);
        arr.setElem(3, 55);
        arr.setElem(4, 22);
        nElems = 5;

        for (j = 0; j < nElems; j++) {
            if (arr.getElem(j) == 55) {
                break;
            }
        }

        for (int k = j; k < nElems; k++) {
            arr.setElem(k, arr.getElem(k + 1));
        }
        nElems--;

        for (j = 0; j < nElems; j++) {
            System.out.print(arr.getElem(j) + " ");
        }
        System.out.println("");
    }
}
```

[10 marks]