

Exercise on Stacks

- 1) A stack ST is empty. What elements will the stack contain after executing the following algorithm:

```
{
    Push (ST, 15)
    Push (ST, 6)
    a = 2*Pop (ST)
    Push (ST, a)
}
```

- 2) A stack STK contains names. Write an algorithm in pseudocode that empties the STK and in the meantime looks whether the name “Mary” is present in the stack. You can use the operations Push(), Pop() and IsEmpty() where IsEmpty() returns ‘true’ if the stack is empty and ‘false’ otherwise.
- 3) A stack STADDR contains addresses. Write an algorithm that removes all addresses that are greater and equal to 12000. You may use other data structures e.g. array to attain what is required.
- 4) Write an algorithm that reads in a sequence of characters and with the help of a stack displays the characters in reverse order.
- 5) Write an algorithm that reads in a sequence of characters, and determines whether its brackets are balanced i.e. every left bracket has its correspondent right bracket and vice-versa.
- 6) Write an algorithm that reads in a positive integer and prints the binary representation of that integer.
- 7) Show how to implement a queue using two stacks.