Laboratory practice 3: Linked List and Arraylist

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1) Project questions Simulation

1.a. Text exercise

i.

```
public static String pc(String str){
      ArrayList<String> list = new LinkedList<>(); //C1
      boolean start= true; // C2
      int index=0;  //C3
      String newString=""; //C4
      for(int i=0;i<str.length()-1;i++){ //C5*n
          if(str.substring(i,i+1).equals("[")){ //C6*(n-1)
              start=true;//C7*(n-1)
              index=0;//C8*(n-1)
          }
          else if(str.substring(i,i+1).equals("]")){ //C9*(n-1)
              start=false; //C10*(n-1)
          }else if(!str.substring(i,i+1).equals("[") //C11*(n-1)
          && !str.substring(i,i+1).equals("]")){ //C12*(n-1)
              if(start){ //C13*(n-1)
                  list.add(index,str.substring(i,i+1)); //C14*(n-1)*1
                  index++; //C15*(n-1)
              }else{//C16*(n-1)
                  list.add(str.substring(i,i+1));//C17*(n-1)
              }
          }
      }

      for(int i=0;i<list.size();i++){ //C18*n
```

```
            newString= newString+list.get(i);//C19*(n-1)
        }

        return newString; //C20
    }
```

1.b. Calculate the complexity of the online exercises

1.c. Explain what the variable n means in the previous exercises

1.d. What did you learn about Stack Overflow? Why does this happen?

1.e. What is the greatest number you could get with the Fibonnacci

1.f. What can you do to calculate bigger Fibonacci 's values?

1.g. What do you conclude about the complexity of CodingBat's

2) Midterm Simulation

2.a. Exercise 1

a) Looking for data in the list

2.b. Exercise 2

c) O(n)

2.c. Exercise 3

2.3.1 Complete line 02

q.size()>1

2.3.2 Complete line 03

<=

2.3.3 Complete line 04

q.remove()

2.3.4 Complete line 06

q.remove()

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2.d. Exercise 4

2.4.1 What is the condition of the while cycle?

lista.size()

2.4.2 Complete line 07

lista.add(auxiliar.pop())

2.e. Exercise 5

2.5.1 What is the condition of the while cycle? Lines 12 and 16

auxiliar1.size()>0 , auxiliar2.size()>0

2.5.2 Complete line 18

personas.offer(edad)

2.f. Exercise 6

c) O(n^2)

2.g. Exercise 7

c) O(n^3)

2.h. Exercise 8

d) O(1)

2.i. Exercise 9

2.9.1 What is the asymptotic complexity in the worst case-scenario?

a) O(k)

2.9.2 What does the algorithm prints when k=21

b)9

2.9.3 What is the asymptotic complexity in the worst case-scenario, when you are adding data to a queue of n elements?

c) O(1)

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2.j. Exercise 10

2.10.1 What is the asymptotic complexity in the worst case-scenario?

d) O(n)

2.10.2 What does the algorithm prints when x=8 and n=20

a)6

2.10.3 What is the asymptotic complexity in the worst case-scenario, when you are searching whether data is or not in a stack?

b) O(n)

3) Recommended reading

3.a. Summary

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