| Last name | |
|------------|--|
| First name | |
| Group | |

| Grade | |
|-------|--|
|-------|--|

Algorithmics Undergraduate 1^{st} year (s1) Final Exam #1 (P1) 3 Jan. 2017 - 10:00 **Answer Sheets**

| 1 | |
|---|--|
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |

Answers 1 (Stacks and garage... -3 points)

| 1. Ar | e the following sequences valid? (circle the right answer) |
|---------------|--|
| (a | n) $(v_1, e_1), (v_2, e_1), (v_3, e_1), s, s, (v_4, e_2), (v_5, e_1), s, s, s, (v_6, e_2), s$: YES NO |
| | If no, describe why: |
| (1 | $(v_1, e_1), (v_2, e_2), s, (v_3, e_2), s, s, s, (v_4, e_1), (v_5, e_2), s, (v_6, e_1), (v_7, e_2), s, s : \text{YES} \text{NO}$ |
| | If no, describe why: |
| 2. T ł | ne rule: |
| _ | |

Answers 2 (Binary Search: search "path" - 2 points)

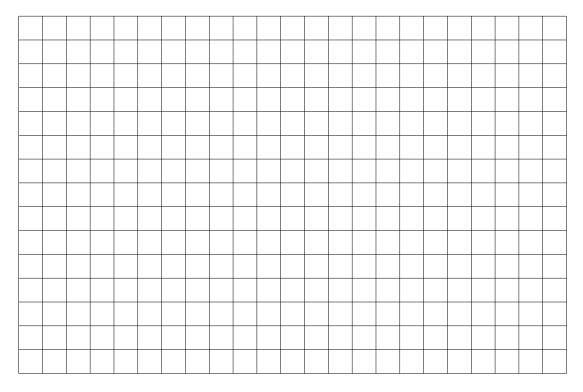
Circle the impossible search sequence(s):

Answers 3 (Test - 1 point)

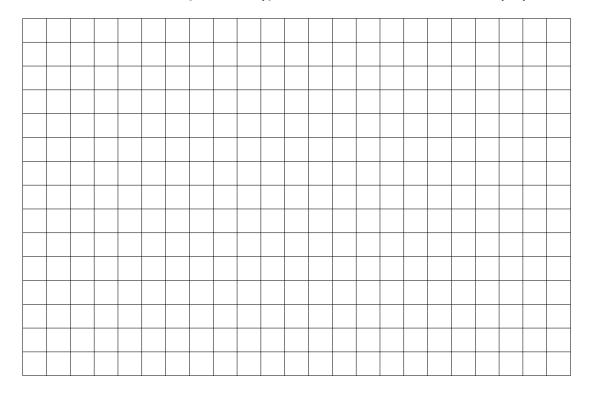
| What does test(x , L) do? | |
|---------------------------------|--|
| | |
| | |
| | |

$Answers \ 4 \ \ (\textbf{Integers} \ \leftrightarrow \textbf{list} - \textbf{5} \ \textit{points})$

1. The function $int_to_list(n, p)$ returns the list of the p digits of n:

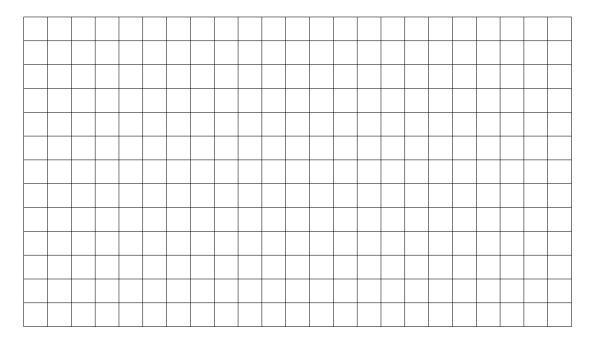


2. The function list_to_ints([d_1, d_2, \cdots, d_p]) returns the pair of integers ($d_0d_1 \cdots d_p, d_p \cdots d_1d_0$):

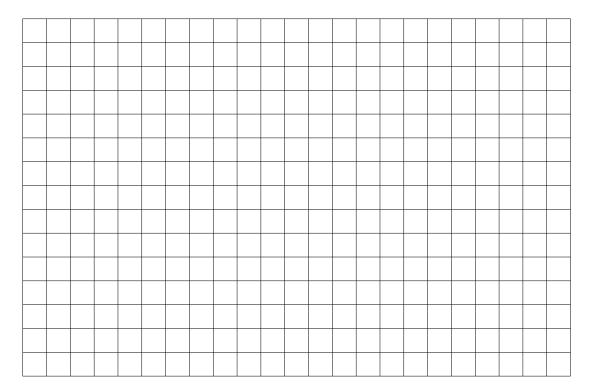


Answers 5 (Histogram and sort – 4 points)

1. The function $\mathtt{hist}(L)$ returns the list that represents the histogram of the values in L (L contains only digits):



2. The function sort(L) returns the list L sorted in increasing order (L contains only digits):



Answers 6 (Kaprekar - 5 points)

The function Kaprekar(n, p) performs the Kaprekar routine to the positive p-digit integer n, till it reaches the same value twice. It displays the computed values.

