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

## Algorithmics <br> Undergraduate $\mathbf{1}^{\text {st }}$ year S2\# <br> Midterm \#2 (C2) <br> November 2019 <br> Answer Sheets

| 1 |  |
| :--- | :--- |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |
| 7 |  |

Answers 1 (A little coursework... - 4 points)

1. Using the hierarchical order number as label for the nodes, draw the tree B:

2. The internal path length of the tree B is:

3. The externe average depth of the tree B is: $\square$

## Answers 2 (BST: search path - 2 points)

Are the following sequences valid?

|  | yes | no |
| :--- | :--- | :--- |
| $50-15-48-22-46-42$ |  |  |
| $48-15-45-22-47-42$ |  |  |
| $15-22-45-43-35-42$ |  |  |
| $22-45-43-15-35-42$ |  |  |

## Answers 3 (Transpose - 3 points)

## Specifications:

The function transpose ( $A$ ) builds and returns the transposed matrix of the non empty matrix $A$.


## Answers 4 (Vertical Symmetry - 5 points)

Specifications:
The function v_symmetric $(M)$ tests whether the matrix $M$ has a horizontal axis of symmetry (vertical symmetry).


## Answers 5 (Maximum Path Sum - 2 points)

## Specifications:

The function maxpath $(B)$ returns the maximum value of the branches of the binary tree $B$ ( 0 if the tree is empty).


## Answers 6 (Full? - 3 points)

## Specifications:

The function $\mathrm{full}(B)$ tests if the binary tree $B$ is full.


## Answers 7 (Mystery - 2 points)

```
>>> what(B)
```

