

# Unit 7 - Week 6

## Course outline

### How to access the portal?

#### Week 1

#### Week 2

#### Week 3

#### Week 4

#### Week 5

#### Week 6

Building Skip-gram model using Python

Reduction of complexity - sub-sampling, negative sampling

Binay tree, Hierarchical softmax

Mapping the output layer to Softmax

Updating the weights using hierarchical softmax

Discussion on the results obtained from word2vec

Recap and Introduction

ANN as a LM and its limitations

Sequence Learning and its applications

#### Quiz : Assignment 6

Week 6 Feedback

#### Week 7

#### Week 8

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#### Week 11

#### Week 12

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# Assignment 6

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

**Due on 2019-09-17, 23:59 IST.**

1) What is the height of the balanced binary tree. if the vocabulary size is 128?

1 point

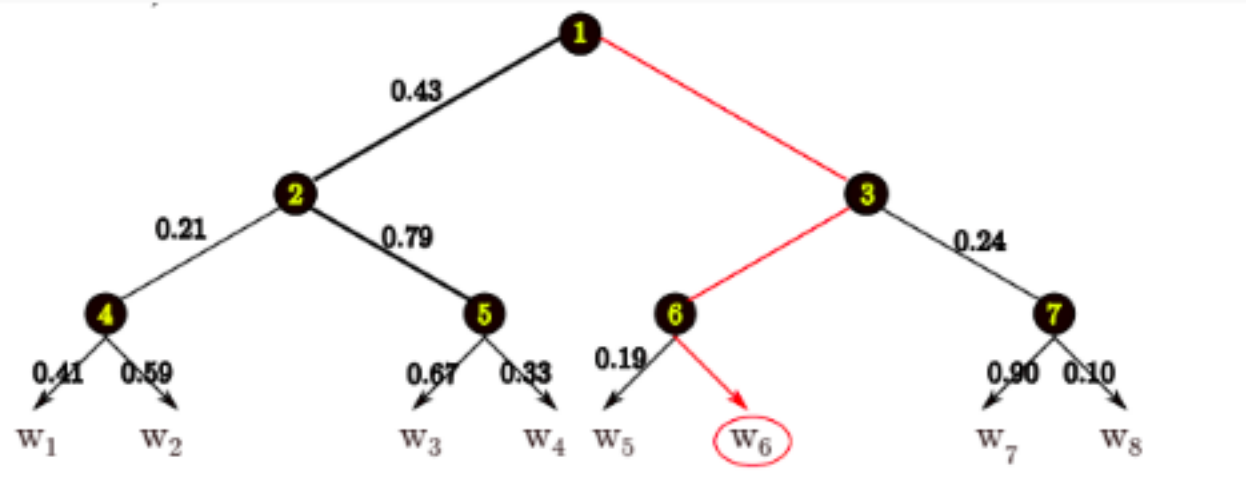
- 64
- 32
- 7
- None of the above

No, the answer is incorrect. Score: 0

Accepted Answers: 7

2) What is the probability of the word 6  $w_6$  (marked in red in the tree given below)?

1 point



- 0.14
- 0.28
- 0.35
- None of the above

No, the answer is incorrect. Score: 0

Accepted Answers: 0.35

3) The statement "Hierarchical Softmax does not provide a unique path to each word in the vocabulary" is

1 point

- True
- False

No, the answer is incorrect. Score: 0

Accepted Answers: False

4) In the hierarchical Softmax model, the ANN learns the probabilistic decisions at every node. Is the statement true?

1 point

- True
- False

No, the answer is incorrect. Score: 0

Accepted Answers: True

5) In the hierarchical Softmax model, the probability mass of 1 is NOT distributed across the vocabulary and  $\sum_i P(w_i) \neq 1$ . Is this statement correct? 1 point

- True
- False

No, the answer is incorrect. Score: 0

Accepted Answers: False

6) The most frequent words are kept at a shorter distance from the root by \_\_\_\_\_

1 point

- Transform coding
- Huffman encoding
- Run-length encoding
- None of the above

No, the answer is incorrect. Score: 0

Accepted Answers: Huffman encoding

7) Is the statement "Hierarchical Softmax increases the computation complexity when compared to Softmax" true?

1 point

- True
- False

No, the answer is incorrect. Score: 0

Accepted Answers: False

8) The RNN imposes a constraint on the length of the input of words. Is the above statement correct?

1 point

- Yes
- No

No, the answer is incorrect. Score: 0

Accepted Answers: No

9) What is the most important architectural change introduced in the recurrent neural network?

1 point

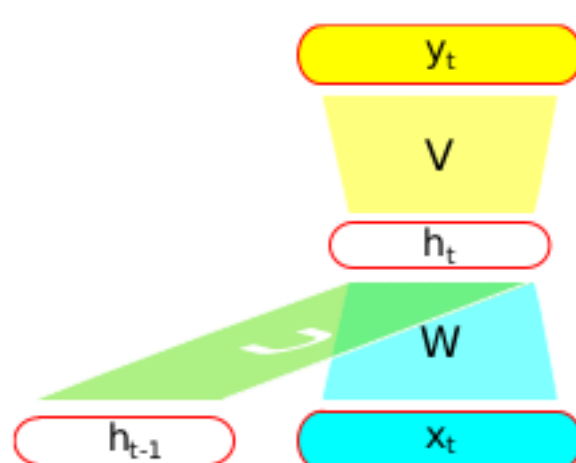
- Multiple hidden layers
- Word embedding as input
- Hierarchical Softmax layer
- State vector
- None of the above

No, the answer is incorrect. Score: 0

Accepted Answers: State vector

10) Using the RNN given in the figure, what is the state of  $h_t$  at time  $t$ ?

1 point



- $h_t = \tanh(Wx_t)$
- $h_t = \tanh(U+Wx_t)$
- $h_t = \tanh(Uh_{t-1}Wx_t)$
- $h_t = \tanh(Uh_{t-1} + Wx_t)$
- None of the above

No, the answer is incorrect. Score: 0

Accepted Answers:  $h_t = \tanh(Uh_{t-1} + Wx_t)$