

**CS6320, Fall 2020**  
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**Homework 6**

**A. Problems:**

**1. Thematic Roles (25 points)**

<b>Thematic Role</b>	<b>Definition</b> <b>Example</b>
Agent	The volitional causer of an event <i>The waiter spilled the soup.</i>
Experiencer	The experiencer of an event <i>John has a headache.</i>
Force	The non-volitional causer of the event <i>The wind blows debris from the mall into our yards.</i>
Theme	The participant most directly affected by an event <i>Only after Benjamin Franklin broke the ice...</i>
Result	The end product of an event <i>The French government has built a regular-size baseball diamond...</i>
Content	The proposition or content of a propositional event <i>Mona asked "You met Mary Ann at a super market?"</i>
Instrument	An instrument used in an event <i>He turned to poaching catfish, stunning them with a shocking device...</i>
Beneficiary	The beneficiary of an event <i>Whenever Ann Callahan makes hotel reservations for her boss...</i>
Source	The origin of the object of a transfer event <i>I flew in from Boston.</i>
Goal	The destination of an object of a transfer event <i>I drove to Portland.</i>

Using the thematic role definitions from the above table, assign the various verb arguments in the following WSJ examples to their appropriate thematic roles:

1. The intense heat buckled the highway about three feet.
2. He melted her reserve with a husky-voiced paean to her eyes.
3. But Mingo, a major Union Pacific shipping center in the 1890s, has melted away to little more than the grain elevator now.

## 2. Word Sense Disambiguation (50 points):

```
function SIMPLIFIED LESK(word, sentence) returns best sense of word

  best-sense  $\leftarrow$  most frequent sense for word
  max-overlap  $\leftarrow$  0
  context  $\leftarrow$  set of words in sentence
  for each sense in senses of word do
    signature  $\leftarrow$  set of words in the gloss and examples of sense
    overlap  $\leftarrow$  COMPUTEOVERLAP(signature, context)
    if overlap > max-overlap then
      max-overlap  $\leftarrow$  overlap
      best-sense  $\leftarrow$  sense
  end
  return(best-sense)
```

Using WordNet Library API to access the WordNet dictionary, implement the SIMPLIFIED LESK algorithm to disambiguate the word *bank* in the sentence. Your output should show the word overlap for each sense of the word *bank* in WordNet and the final chosen sense.

*The bank can guarantee deposits will eventually cover future tuition costs because it invests in adjustable-rate mortgage securities.*