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## INTRODUCTION - A WORD GAME

In this problem set, you'll implement *two* versions of the 6.00 wordgame!

Don't be intimidated by the length of this problem set. There is a lot of reading, but it can be done with a reasonable amount of thinking and coding. It'll be helpful if you start this problem set a few days before it is due!

Let's begin by describing the 6.00 wordgame: This game is a lot like Scrabble or Words With Friends, if you've played those. Letters are dealt to players, who then construct one or more words out of their letters. Each **valid** word receives a score, based on the length of the word and the letters in that word.

The rules of the game are as follows:

### Dealing

- A player is dealt a hand of  $n$  letters chosen at random (assume  $n=7$  for now).
- The player arranges the hand into as many words as they want out of the letters, using each letter at most once.
- Some letters may remain unused (these won't be scored).

### Scoring

- The score for the hand is the sum of the scores for each word formed.
- The score for a word is the sum of the points for letters in the word, multiplied by the length of the word, plus 50 points if all  $n$  letters are used on the first word created.



- Letters are scored as in Scrabble; A is worth 1, B is worth 3, C is worth 3, D is worth 2, E is worth 1, and so on. We have defined the dictionary `SCRABBLE_LETTER_VALUES` that maps each lowercase letter to its Scrabble letter value.
- For example, 'weed' would be worth 32 points  $((4+1+1+2)$  for the four letters, then multiply by  $\text{len}(\text{'weed'})$  to get  $(4+1+1+2)*4 = 32$ ). Be sure to check that the hand actually has 1 'w', 2 'e's, and 1 'd' before scoring the word!
- As another example, if  $n=7$  and you make the word 'waybill' on the first try, it would be worth 155 points (the base score for 'waybill' is  $(4+1+4+3+1+1+1)*7=105$ , plus an additional 50 point bonus for using all  $n$  letters).

### Sample Output

Here is how the game output will look!

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