

Midterm 2 Sample Questions

1. Stacks

Assume that you have a class `Stack` with methods `push(item)`, `pop()`, and `is_empty()`. Use a `Stack` to implement your solution to the problem below.

Write a function `is_balanced(text, lsym, rsym)` that takes three string arguments `text`, `lsym`, and `rsym` and returns `True` if `text` is balanced with respect to the strings `lsym` and `rsym` and `False` otherwise.

For example,

```
is_balanced("(a + b) * 3 + 8 * (j + 4)", "(", ")")  
returns True
```

```
is_balanced("[4, 6, [8, 2], [3, ]]", "[", "]")  
returns False
```

2. List comprehensions

a) What is the value of the following expression?

```
[ [y * y] for y in range(4) ]
```

b) Given a list `alist`, use a list comprehension to create a list consisting of the elements of `alist` in the even numbered positions.

Example: if

```
alist = [1,2,3,4,5,6]
```

your list comprehension should create the list

```
[1, 3, 5]
```