CSE 160
Midterm Practice Name: _____

1. Evaluate the following Python expressions:

```
(5 / 2) + 2 * 2
```

```
["live", "long", "and", "prosper"][1][1:]
```

```
len({1:"one", 2:"two", 3:"three"}[2])
```

```
float(str(2 + 2) + "5") + 1
```

```
itemgetter(1)(["to", "boldly", "go"])
```

2. Write a function that sorts a list of numbers by their absolute value, and returns a new sorted list as the result.

   For example: `sort_abs([2, -1, 4, -5, -2, 1])` returns `[-1, 1, 2, -2, 4, -5]`.

3. Write a function that takes a list as a parameter, and returns a set containing the elements that appear more than once in the list.

   For example: `duplicates([1, 3, 2, 4, 3, 1, 1])` returns `set([1, 3])`.

4. Write a function that takes a string as an argument, and returns a dictionary that maps each character to its frequency in the given string.

   For example: `freq("Star Wars")` returns `{"S":1, "t":1, "a":2, "r":2, " ":1, "W":1, "s":1}`.

5. Write a function that reverses a list, without using the built-in reverse function. Your function should return the reversed list, and not modify the list passed as a parameter.

   For example: `reverse_list([1, 2, 3])` returns `[3, 2, 1]`.

6. Consider the following Python program:

```
def pos_dif(y, x):
    """
    Returns the positive difference of two numbers.
    """
    # Location B
    return abs(x - y)

def percent_error(actual, expected):
    """
    Returns the percent error of an experimental result.
    """
    # Location A
    x = pos_dif(actual, expected)
    y = expected
    # Location C
    return x / y

a = 15.0
b = 10.0
print percent_error(a, b)
```

For each of the locations indicated above, draw the environment frame(s) at that moment during execution.