1. After the following lines of code are executed, what values are stored in the set output_set?

```python
input_list = [3, 1, 4, 1, 5, 9, 2, 6, 5, 3, 5, 9]
output_set = set()
for i in input_list:
    output_set.add(i)
```

2. In one line of code, print the set of all numbers that are in both the sets. (i.e. - their intersection)

```python
set_one = {'a', 'b', 'c', 'd', 'e', 'f'}
set_two = {'a', 'c', 'd', 'g'}
```

3. Given the following code:

```python
weather = {
    'Monday': {'low': 45, 'high': 62, 'precipitation': 0.3},
    'Tuesday': {'low': 48, 'high': 69, 'precipitation': 0.2},
    'Wednesday': {'low': 42, 'high': 58, 'precipitation': 0.5}
}
```

What does the following code print:

```python
print(weather['Monday']['high'])
print(weather['Tuesday'][0])
print(weather['Wednesday'])
```
Midterm Review

1. Evaluate the following Python expressions:
   
   \[(5 \div 2) + 2 \times 2\]
   
   \[
   \text{"live", "long", "and", "prosper"}[1][1:]
   \]
   
   \[
   \text{len}\{1:\text{"one"}, 2:\text{"two"}, 3:\text{"three"}\}[2]
   \]
   
   \[
   \text{float(str(2 + 2) + \"5\")} + 1
   \]

2. 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]`.

3. Consider the following Python program:
   
   ```python
   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.
CSE 160 Section 5 Solutions

1. \{1, 6, 3, 9, 5, 2, 4\} (note values in random order)

2. print(set_one & set_two)
   The intersection is: \{'a', 'c', 'd'\}

3. 62
   KeyError: 0
   \{'low': 42, 'high': 58, 'precipitation': 0.5\}

4.
1. \((5 / 2) + 2 * 2\)
   \[2.5 + 2 * 2\]
   \[2.5 + 4\]
   \[6.5\]

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

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

   float(str(2 + 2) + "5") + 1
   float(str(4) + "5") + 1
   float("45") + 1
   45.0 + 1
   46.0

2. def reverse_list(original_list):
   
   result = []
   for element in original_list:
       result.insert(0, element)
   return result
3. Location A:

<table>
<thead>
<tr>
<th>Global Environment</th>
<th>percent_error</th>
</tr>
</thead>
<tbody>
<tr>
<td>a -&gt; 15.0</td>
<td>actual -&gt; 15.0</td>
</tr>
<tr>
<td>b -&gt; 10.0</td>
<td>expected -&gt; 10.0</td>
</tr>
<tr>
<td>pos_dif -&gt; (function)</td>
<td>percent_error -&gt; (function)</td>
</tr>
</tbody>
</table>

Location B:

<table>
<thead>
<tr>
<th>Global Environment</th>
<th>percent_error</th>
<th>pos_dif</th>
</tr>
</thead>
<tbody>
<tr>
<td>a -&gt; 15.0</td>
<td>actual -&gt; 15.0</td>
<td>y -&gt; 15.0</td>
</tr>
<tr>
<td>b -&gt; 10.0</td>
<td>expected -&gt; 10.0</td>
<td>x -&gt; 10.0</td>
</tr>
<tr>
<td>pos_dif -&gt; (function)</td>
<td>percent_error -&gt; (function)</td>
<td></td>
</tr>
</tbody>
</table>

Location C:

<table>
<thead>
<tr>
<th>Global Environment</th>
<th>percent_error</th>
</tr>
</thead>
<tbody>
<tr>
<td>a -&gt; 15.0</td>
<td>actual -&gt; 15.0</td>
</tr>
<tr>
<td>b -&gt; 10.0</td>
<td>expected -&gt; 10.0</td>
</tr>
<tr>
<td>pos_dif -&gt; (function)</td>
<td>x -&gt; 5.0</td>
</tr>
<tr>
<td>percent_error -&gt; (function)</td>
<td>y -&gt; 10.0</td>
</tr>
</tbody>
</table>
a) Out of all the topics we have covered in this course, which topic do you feel the most uncertain about?

b) Do you feel prepared for the midterm?