1. (4 points) What is the binary representation of the decimal value 216?

If you interpret the binary value from the first part as an eight bit signed value in 2s-complement, what is the equivalent decimal value?
2. (6 points) If our basic processor begins execution with the first instruction shown below, what value will be in the accumulator after the second instruction is executed? (The list of instructions is given below.)

<table>
<thead>
<tr>
<th>addr</th>
<th>value</th>
</tr>
</thead>
<tbody>
<tr>
<td>03a7</td>
<td>lffe</td>
</tr>
<tr>
<td>03a8</td>
<td>a3a7</td>
</tr>
<tr>
<td>03a9</td>
<td>93d5</td>
</tr>
</tbody>
</table>

What value will be in the program counter after the third instruction is executed?

0000   halt – halt execution
0001   negate – \( ACC := -ACC \)
1xxx   immediate load – if sign bit of xxx is 0 then \( ACC := 0xxx \) else \( ACC := fxxx \)
2xxx   direct load – \( ACC := M[0xxx] \)
3xxx   indirect load – \( ACC := M[M[0xxx]] \)
4xxx   direct store – \( M[0xxx] := ACC \)
5xxx   indirect store – \( M[M[0xxx]] := ACC \)
6xxx   branch – \( PC := 0xxx \)
7xxx   branch if zero – if \( ACC = 0 \) then \( PC := 0xxx \)
8xxx   branch if positive – if \( ACC > 0 \) then \( PC := 0xxx \)
9xxx   branch if negative – if \( ACC < 0 \) then \( PC := 0xxx \)
axxx   add – \( ACC := ACC + M[0xxx] \)