Homework 1

Due: January 29, 2020

Name:

1. (20 points) Write a function called `memset` in emu806 that sets a block of bytes in memory to a specified value. Inputs to the function are:

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI</td>
<td>Starting address</td>
</tr>
<tr>
<td>AX</td>
<td>Number of bytes</td>
</tr>
<tr>
<td>BL</td>
<td>Value to set</td>
</tr>
</tbody>
</table>

For example, suppose we call `memset` with SI = 0x7E10, AX = 0x10, BL = 0xFE

Before calling `memset`

```
7E00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
7E10 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
7E20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

After calling `memset`

```
7E00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
7E10 FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE
7E20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

2. (20 points) Write a function called `strcpy` in emu806 that copies a NULL-terminated string from one place in memory to another.

<table>
<thead>
<tr>
<th>Register</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI</td>
<td>Source</td>
</tr>
<tr>
<td>DI</td>
<td>Destination</td>
</tr>
</tbody>
</table>

3. (20 points) Write a function called `hex2int` that converts a NULL-terminated string into a two-byte hex integer. The SI register will hold the starting address of the string in memory. For example, an input to the `hex2int` may be the string “12FA” located at address 0x7E10 in memory:

```
7E00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
7E10 31 32 46 41 00 00 00 00 00 00 00 00 00 00 00 00
7E20 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

Your function should load the AX register with the binary value 0x12FA. This is basically the opposite of the `int2hex` function that we discussed in class.

4. (20 points) Write a function called `int2hex` that converts a 2-byte integer into a four-byte NULL-terminated string represented in ASCII.