1. (20) List the various arrays from our book that are created by the OS. In each case, state whether the array is accessed by the hardware.

<table>
<thead>
<tr>
<th>array name in book</th>
<th>hardware access?</th>
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2. Running the Linux `pstree` command displays “parents” and “children” of processes. Suppose we run the command on CSIF, and notice that there is a `gcc` process running.

(a) (15) The likely parent of that process is either ____________ or ____________ or ____________ or ... (Fill in as many command names as appropriate; answer “none” if there is likely no parent.)

(b) (15) The likely child of that process is either ____________ or ____________ or ____________ or ... (Fill in as many command names as appropriate; answer “none” if there is likely no child.)

3. (20) Consider the 11-line excerpt of Linux internal code on p.186, at the instant just before line 12 is executed. Suppose at that time, c(ESP) = 0x8000. What will be in memory location 0x8000 at that time?

4. Consider the threads example that begins on p.190.

(a) (15) For each of the following variables in the code, write either SAAT (“same address across threads”) or DAAT (“different address across threads”).

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(b) (15) Suppose we run the program with the command

```
% hw /dev/pts/2 /dev/pts/5 /dev/pts/6
```

and we then type `ps axH` in another window. In the output of this latter command, we will likely see ____________ entries for `hw`, ____________ of which are in Run state, and ____________ of which are in Sleep state.

Solutions:

1. ________________________________

2a. tcsh, make

2b. `cpp`, `cc1`, `as`, `ld`

3. PC value of the process that we are about to resume (called `v` in the text)

4a. ________________________________  

4b. 4, 1, 3