Chapter 11 – Real-Time Kernels and Operating Systems
(Embedded) Application

Command Interface
System I/O

System and User
Memory Management

InterTask
Communication

CPU and Resource
Scheduling / Dispatching

Thread Management

Microprocessor Hardware
and Hardware Resources
<table>
<thead>
<tr>
<th>Pointer</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process ID</td>
<td></td>
</tr>
<tr>
<td>Program Counter</td>
<td></td>
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<tr>
<td>Register Contents</td>
<td></td>
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<tr>
<td>Memory Limits</td>
<td></td>
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<tr>
<td>Open Files</td>
<td></td>
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<tr>
<td>Etc.</td>
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</tbody>
</table>
// The task control block
struct TCB
{
    void (*taskPtr)(void* taskDataPtr);
    void* taskDataPtr;
    void* stackPtr;
    unsigned short priority;
    struct TCB* nextPtr;
    struct TCB* prevPtr
};

// The task
void aTask(void* taskDataPtr)
{
    function body;
}

// The data passed into the task
struct taskData
{
    int taskData0;
    int taskData1;
    char taskData2
};
Runtime Stack

Application Stack0

Application Stack1

Application Stack2