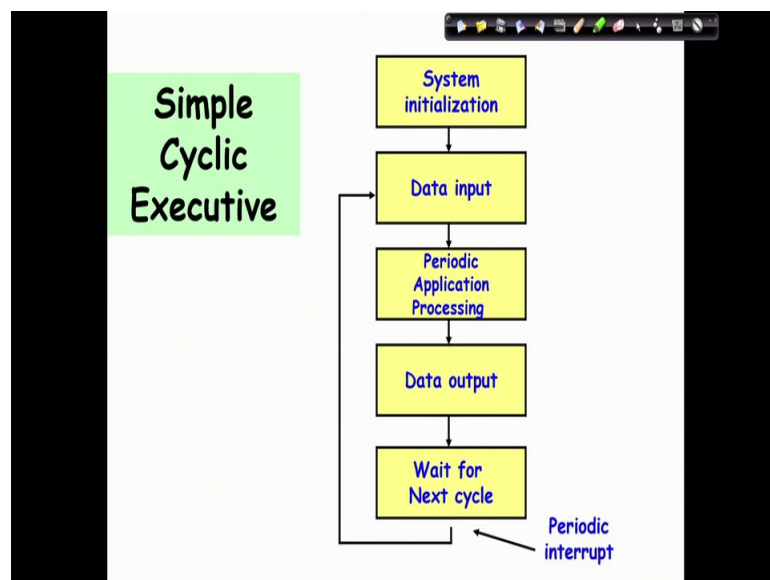


Real-time Operating System
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Lecture – 03
Cyclic Executives

We had looked at some very basic issues in real-time operating systems and we had discussed that tasks scheduling is one of the major issues with the real-time operating system because the application deadlines are met with a help of a suitable tasks scheduler. Now, we will start looking at some of the schedulers that are being used. We will start with the simplest scheduler. It goes by the name of cyclic executives.

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The cyclic executives are the simplest real-time operating systems. These are run on very simple embedded applications where there is a severe constraint and the processor capabilities may be a 4-bit or 8-bit processor and the memory is very less. In this situation a full-fledged operating system is difficult to use, the tasks are simple here and periodic in nature and this real-time cyclic executives are basically very small programs. Following is the basic structure of a cyclic executive.

Initially to start with the system, it is started with a system initialization where various parameters are set and then there is a periodic timer which gives timer interrupt and it is a cyclic executive which starts a call to a program or executes a program where initially there is a data input, application processing and the data output and then it keeps on waiting until the next period comes. This is the simplest real-time operating system. It's basically a small program. An example of its working is the data input.

Suppose we have a temperature controller. In the temperature controller initially, suppose the temperature has to be read from the sensor and this is the data input and then we need to check if it is below a threshold, higher than a threshold or is it abnormal etcetera and then based on that we possibly want to show the current temperature reading on a display. That is the data output and then we wait for the next interrupt and the cyclic executive continues looping here infinitely, each time waiting for the interrupt doing some simple processing. This is the simplest real-time operating system run on the most elementary embedded systems.

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