REAL TIME OPERATING SYSTEMS

Lesson-4:
Event Functions

1. Event Functions

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Event Functions

- **Wait for only one event (semaphore or mailbox-message posting event)**

- **Event related OS functions can wait for number of events before initiating an action or wait for any of the predefined set of events**

- **Events for wait can be from different tasks or the ISRs**

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Event functions at OS

- Some OSes support and some don't support event functions for a group of event

OSEventCreate ( )

- Creates an event register, which has a set of 8 or 16 or 32 flag-bits

- Event register is for defining the information of occurrences of the events in an event register

- Event register is for clearing the defined occurrences of the events in an event register

- Each bit corresponds to an event flag

OS Event Register flag-bits

- Flag = 1 means occurrence of an event in an event register

- Flag = 0 means an event in an event group has not occurred

- A subset of flags defines an event-group

- For example, a 16-bit register can be divided into four groups. Group 0 is from bit 0 to bit 3, group 1 from bit 4 to bit 7, Group 2 is from bit 8 to bit 11 and group 3 from bit 12 to bit 15

Event functions at OS…

- OSEventQuery ( )── to query an event register to find the event register existence and its contents.

- OSEventDelete ( ) ── delete the event register

- SET (event_flag) to set one of the bits at the event register

- Event flag in the register can be set by an ISR or Task using SET (event_flag) function

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Event functions at OS…

- CLEAR (eventFlag) clears the flag in the event register.

- An event flag can be cleared by an ISR or Task

- WAIT_ALL function─ task waits for the occurrences of setting all the event flags in a group. [Wait till AND operation between all flags in the group equals true.]

Event functions at OS…

- WAIT_ANY function─ task waits for the occurrences of setting at least one event flag setting in a group. [Wait till OR operation between all flags in the group equals true.]

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Summary

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We learnt

- Defining the occurrences of the events in an event register
- Setting and clearing the event flags by tasks and ISRs
- OSEventCreate ( ) and OSEventDelete ( )
- OSEventQuery ( )
- SET ( ) and CLEAR ( )
- WAIT_ALL ( ) and WAIT_ANY ( )

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End of Lesson 4 of Chapter 8

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