

REAL TIME OPERATING SYSTEMS

Lesson-4: **Event Functions**

1. Event Functions

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

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

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.]

Summary

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 ()`

End of Lesson 4 of Chapter 10
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Event Functions