

Operating Systems: Homework #2

Due on February 10, 2016 at 11:59pm

Professor Qu

Monday & Wednesday 3:30pm — 5:17pm

Nicholas Land

Problem 1

Briefly explaining WHAT CONDITIONS cause a process to move between each of the following 3 states indicated by each arrow (from 1 to 6). Label it N/A if it doesn't happen.

SOLUTION

From running \Rightarrow ready 1 : Interrupt

- An interrupt is a signal to the processor emitted by hardware or software indicating an event that needs immediate attention.

From ready \Rightarrow running 2 : Scheduler Dispatch

- A process that is dispatched is a process that is scheduled to execute.

From ready \Rightarrow waiting 3 : N/A

From waiting \Rightarrow ready 4 : I/O or event completion

- An I/O-bound process is a process that spends more time doing I/O than it does computations. Event completion is when the process has finished executing.

From waiting \Rightarrow running 5 : N/A

From running \Rightarrow waiting 6 : I/O or event wait

- Event wait is a process that is waiting for some event to occur (such as an I/O completion or reception of a signal).

Problem 2

Question 2. In this question, events are given during the execution of a grading program. You are supposed to understand the process state transition and fill out those blanks and choose the right options. Hint: state transition occurs when some particular events happen. Please use one of ready, running, blocked states as the possible state for the process. When you need to determine the running mode, please use either user or kernel. [Please check and understand these concepts through reading either from the slides or textbook] [19 points: one for each cell in the answer table]

SOLUTION

Q1 : Ready State

Q2 : Running State

Q3 : User Mode

Q4 : Blocked State

Q5 : Kernel Mode

Q6 : Yes

Q7 : Ready State

Q8 : Blocked State

Q9 : Ready State

Q10 : Running State & User Mode

Q11 : Running State to Blocked State

Q12 : Ready State to Running State

Q13 : Kernel Mode

Q14 : Ready State

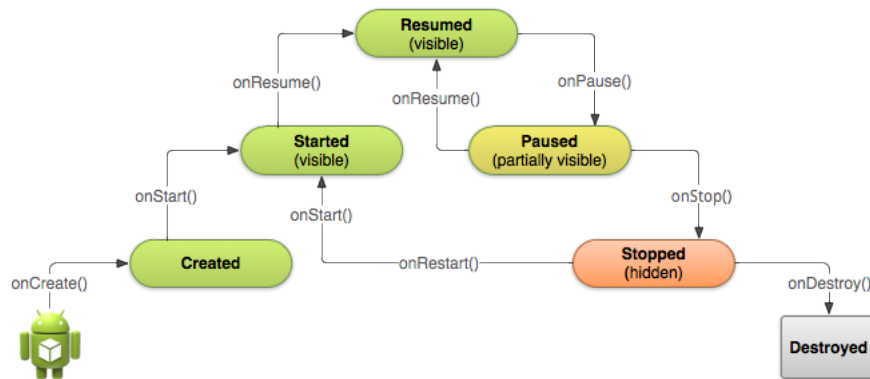
Q15 : User Mode

Q16 : Ready

Problem 3

Question 3. Case study, in this task, you need to study a process state transition for any real system (linux, wondows, mac, android, ios, etc.). What you need to do is draw (or copy paste) the process state transition diagram and describe the conditions for every transition.

SOLUTION



- When the `onCreate()` method is called the process is created and moves into the New process state.
- When the `onStart()` method is called the process moves from Ready to Running.
- When the `onResume()` method is called the process moves from Waiting to Running.
- When the `onPause()` method is called the process moves from Running to Waiting.
- When the `onStop()` method is called the process moves into the Waiting state.
- When the `onDestroy()` method is called the process moves from Waiting to Terminated.