Operating System and System Administration IT2060

Tutorial 04

Year 02 Semester 01 2020

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1. Draw the diagram showing all possible process states and describe them.
2. Give two reasons for the system to select a new process to run.
3. Consider the following program in writing the answer:

```
void *printme(void *ip) {
   int *i;
   i = (int *) ip;
   printf("Hi. I'm thread %d\n", *i);
   exit(0);
}
main() {
   int i, vals[4];
   pthread_t tids[4];
   void *retval;
   for (i = 0; i < 4; i++) {
       vals[i] = i;
       pthread_create(tids+i, NULL, printme, vals+i);
   }
   for (i = 0; i < 4; i++) {
       printf("Trying to join with tid %d\n", i);
       pthread_join(tids[i], &retval);
       printf("Joined with tid %d\n", i);
   }
}
```

   a) How many thread creates in this program?

   b) What is the purpose of the *pthread_join() finction* in the above code?

   c) What is the function name which is executed by each thread?

4. List the advantages and disadvantages user level threads and kernel level threads.

5. What is the process control block? List at least four pieces of information that are included in the PCB.
6. Discuss two main reasons for a process to be switched by the operating system.
7. List two advantages of threads over processes.
8. Briefly describe why inter process communication is slower than the inter thread communication.
9. List the 4 items sored in the thread control block.
10. A signal is used to notify a process that a particular event has occurred. In a multithreaded system, to which thread should a signal be delivered?