



# INTERNATIONAL TECHNOLOGICAL UNIVERSITY

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## Department of Computer Science Software Engineering (SWE 500)

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### Project #2 Preview

#### Process Scheduling Algorithms

We will build simulation written in C or Java programming language that experiment with different runs using different process scheduling algorithms:

The total simulation time is 150 quantum/time-units.

First generate your workload. A process is represented by

<arrival time, runtime, priority>

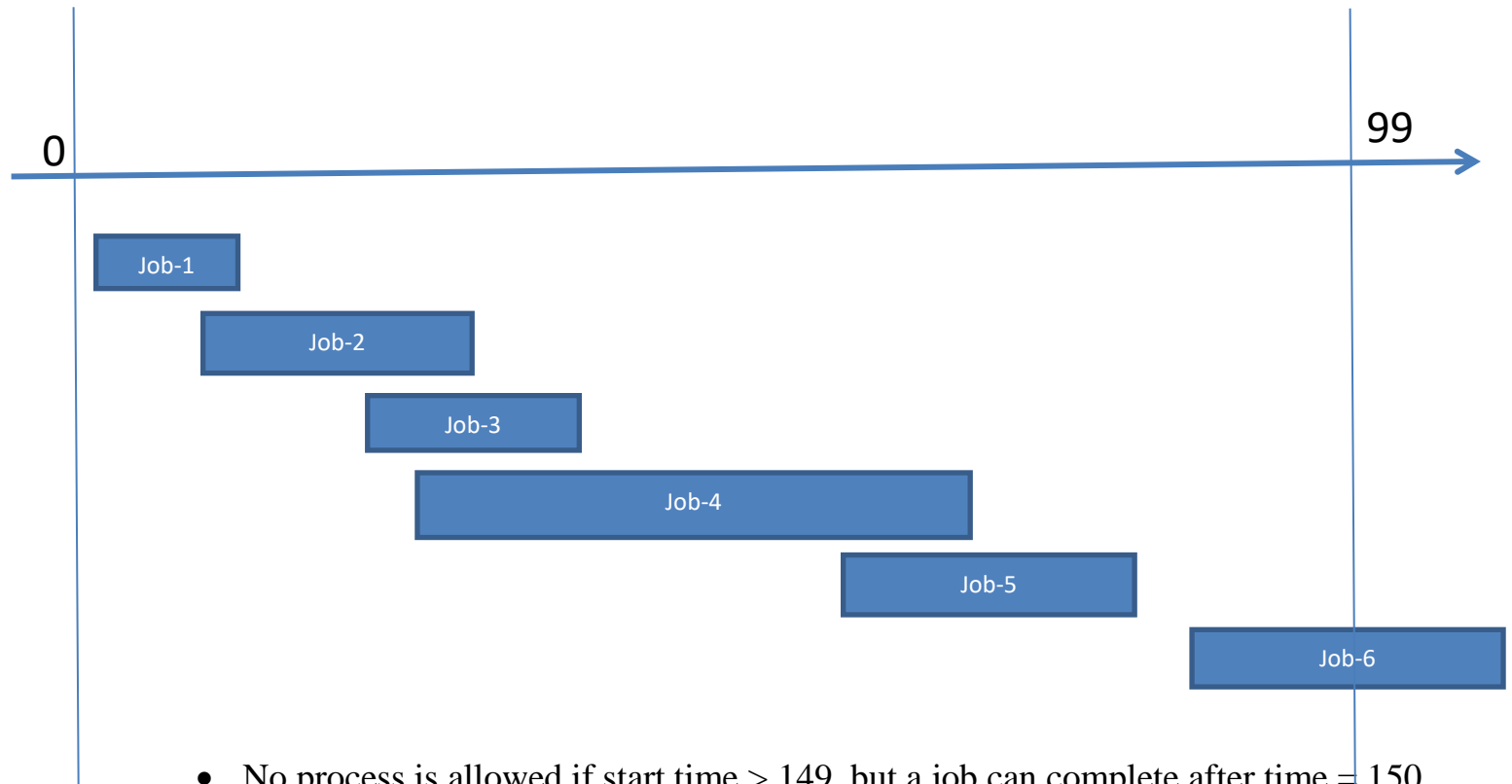
- Use specific seed value for your random number generator.
- Unix rand() function returns random number between 0 and RAND\_MAX (32767).
- #include <stdlib.h>

```
int main()
{
    int seed = time(NULL);
    srand(seed);                // guarantee consistency when debugging
    int arrival_time = rand() % 150;    // will return num between 0 and 149

    int service_time = (rand() % 11);    // will return num between 0 and 10
    if (service_time == 0) service_time += 1; // service_time = 1 .. 10

    int priority = rand() % 5;
    if (priority == 0) priority += 1;    // priority between 1 .. 4
}
```

- Generate ~10 jobs, sort them based on arrival time. Run and verify that CPU is never idle more than 2 quanta waiting for work to do. Otherwise increase number of jobs.



- No process is allowed if start time  $> 149$ , but a job can complete after time  $= 150$  quantum.
- CPU is scheduled at quanta boundary, i.e., if processes completed before end of quanta then CPU will be idle the remaining of this quantum
- Generate 5 sets of workloads. Each algorithm is run 5 times and get average per algorithm.

### Definitions:

- **Turnarund time:** Time required for a particular process to complete, from submission time to completion. It is equal to the sum total of *Waiting time* and *Execution time*.
- **Response time:** The time taken in a program from the issuance of a command to the commence/beginning of a response to that command (i.e., the time-interval between submission of a request, and the start of execution).