Scheduling Algorithms Analysis

Donald Lee Beadle

11/15/2017

R Analysis Results

Mean of Wait Time

First Come First Served

```
fcfs.mean
```

```
## [1] 270.98
```

Highest Priority First

```
hpf.mean
```

```
## [1] 318.34
```

Shortest Remaining Time

```
srt.mean
```

```
## [1] 111.71
```

Round Robin

```
rr.mean
```

```
## [1] 290.6263
```

Variance of Wait Time

First Come First Served

```
fcfs.var
```

```
## [1] 78409.29
```

Hightest Priority First

```
hpf.var
```

```
## [1] 218359.7
```

Shortest Remaining Time

```
srt.var
```

```
## [1] 86343.48
```

Round Robin

```
rr.var
```

```
## [1] 105668.7
```

Tables

Mean Table

```
rbind(Algorithm, Mean)
```

```
##             [,1]     [,2]     [,3]     [,4]
## Algorithm "FCFS"   "HPF"    "SRT"    "RR"
## Mean      "270.98" "318.34" "111.71" "290.626262626263"
```

Variance Table

```
rbind(Algorithm, Variance)
```

```
##             [,1]               [,2]                [,3]
## Algorithm "FCFS"             "HPF"               "SRT"
## Variance  "78409.2925252525" "218359.681212121"  "86343.4807070707"
##             [,4]
## Algorithm "RR"
## Variance  "105668.746650175"
```

C Program Analysis Results

Mean of Wait Time

FCFS Mean: 270.980000

HPF Mean: 318.340000

SRT Mean: 111.710000

RR Mean: 290.626263

Variance of Wait Time

FCFS Variance: 76897.160000

HPF Variance: 215164.960000

SRT Variance: 85357.340000

RR Variance: 103752.282828

Analysis

In computation through the C program and analysis of the outfiles through rstudio, the averages calculated were the same. The variances calculated through C versus rstudio were very similar but not identical. However, these small range differences can be considered negligible for this analysis.

From the Mean Table, it can be seen that the order of algorithms, from shortest average wait time to longest, is the Shortest Remaining Time (SRT), First Come First Served (FCFS), Round Robin (RR), and Highest Priority First (HPF). The SRT has the fastest average wait time and the HPF has the slowest average wait time.

From the Variance Table, it can be seen that the order of the algorithms, from smallest variance (more predictable) to the largest variance (less predictable), is First Come First Served, Shortest Remaining Time, Round Robin, and Highest Priority First. The FCFS has the smallest variance and is the most predictable. The HPF has the highest variance and is the least predictable.

When considering both metrics, the SRT has the best performance. Conversely, the HPF has the worst performance. The SRT has the fastest average wait time and second lowest variance. Therefore, the SRT exhibits good behavior through speed and predictability. The HPF has the longest wait time and the highest variance. Therefore, the HPF suffers the slowest speed and least amount of predictability.