Самостійна робота 4

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Імітаційне моделювання роботи АТС

Підключимо потрібні пакети

```
library(queueing)
library(pander)
```

```
# Вхідний потік M/M/c/K
lambda <- 3
input_mmck <- NewInput.MMCK(lambda = 3, mu = 4, c = 5, k = 5)

CheckInput(input_mmck)

# Create queue class object
output_mmck <- QueueingModel(input_mmck)

# Get queue model report
pander(Report(output_mmck))
```

The inputs of the model M/M/c/K are: lambda: 3, mu: 4, c: 5, k: 5

The outputs of the model M/M/c/K are:

The probability (p0, p1, …, pk) of the clients in the system are: 0.4724282 0.3543212 0.1328704 0.03321761 0.006228302 0.0009342453 The traffic intensity is: 0.749299316040184 The server use is: 0.149859863208037 The mean number of clients in the system is: 0.749299316040184 The mean number of clients in the queue is: 0 The mean number of clients in the server is: 0.749299316040184 The mean time spend in the system is: 0.25 The mean time spend in the queue is: 0 The mean time spend in the server is: 0.25 The mean time spend in the queue when there is queue is: NA The throughput is: 2.99719726416074

```
# Get queue model summary
summary(output_mmck)
```

```
##   lambda mu c k  m        RO        P0 Lq Wq        X         L    W Wqq Lqq
## 1      3  4 5 5 NA 0.1498599 0.4724282  0  0 2.997197 0.7492993 0.25  NA  NA
```

```
output_mmck
```

```
## $Inputs
## $lambda
## [1] 3
##
```

```
## $mu
## [1] 4
##
## $c
## [1] 5
##
## $k
## [1] 5
##
## attr(,"class")
## [1] "i_MMCK"
##
## $RO
## [1] 0.1498599
##
## $Lq
## [1] 0
##
## $VNq
## [1] 0
##
## $Wq
## [1] 0
##
## $VTq
## [1] 0
##
## $Throughput
## [1] 2.997197
##
## $L
## [1] 0.7492993
##
## $VN
## [1] 0.7463209
##
## $W
## [1] 0.25
##
## $Lqq
## [1] NA
##
## $Wqq
## [1] NA
##
## $Pn
## [1] 0.4724282304 0.3543211728 0.1328704398 0.0332176099 0.0062283019
## [6] 0.0009342453
##
## $Qn
## [1] 0.472870007 0.354652505 0.132994689 0.033248672 0.006234126
##
## $FWq
## [1] 0
```

```
## 
## attr(,"class")
## [1] "o_MMCK"
```