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Técnicas de aprendizaje automático para sistemas operativos

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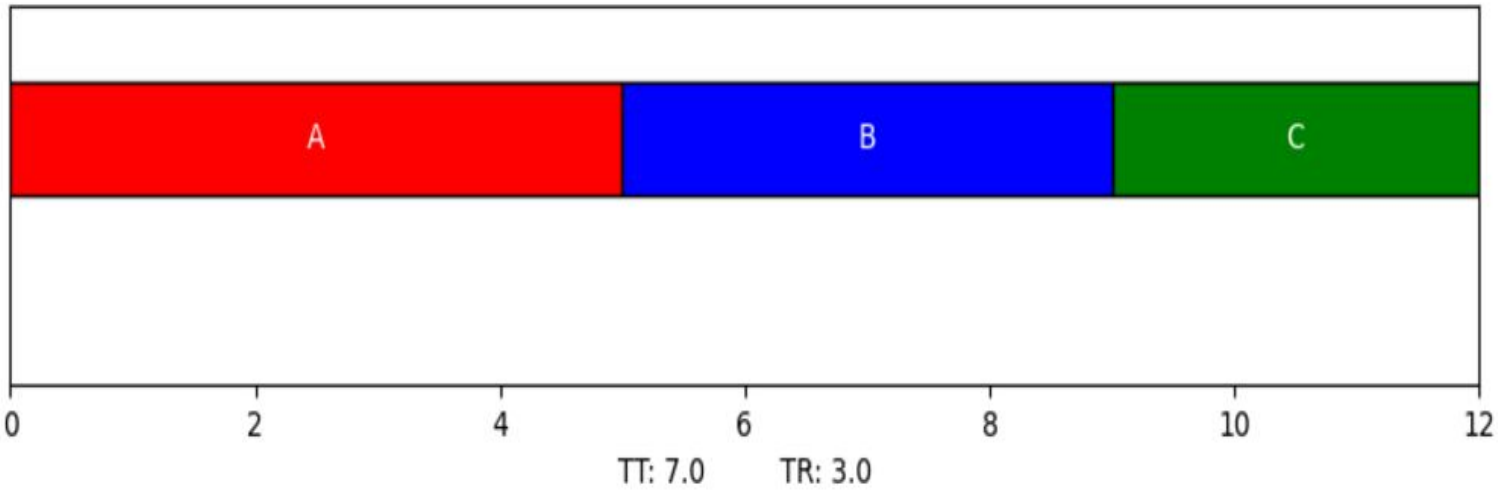
Introducción

Este proyecto analiza y optimiza la programación de procesos en sistemas operativos mediante la implementación de algoritmos tradicionales como FCFS, SJF, STCF y RR, comparándolos con un enfoque moderno basado en aprendizaje automático. Se evalúa su desempeño a través de métricas como tiempo de turnaround y tiempo de respuesta, con visualizaciones como diagramas de Gantt para entender su comportamiento.

FCFS(First Come First Served)

Proceso	Arrival time	Run time
A	0	5
B	0	4
C	5	3



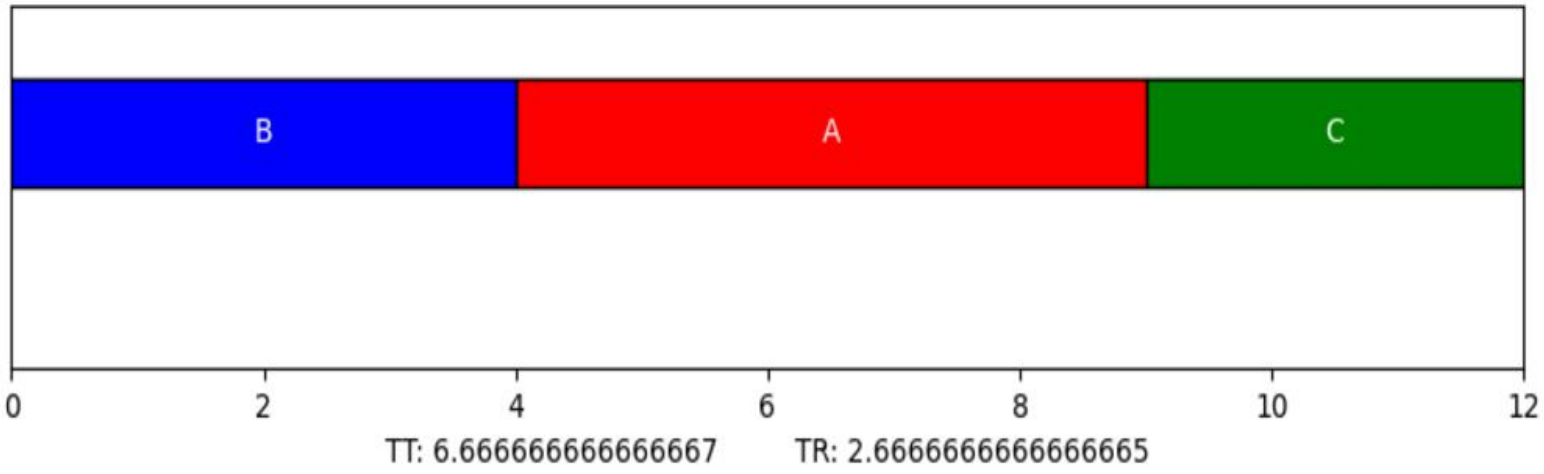
Tturnarround,A = 5-0 = 5
Tturnarround,B = 9-0 = 9
Tturnarround,C = 12-5 = 7
Tturnarround,avg = 21/3 = 7

Tresponse,A = 0-0 = 0
Tresponse,B = 5-0 = 5
Tresponse,C = 9-5 = 4
Tresponse,avg = 9/3 = 3

Total = 10

SJF(Shortest Job First)

Proceso	Arrival time	Run time
A	0	5
B	0	4
C	5	3



Tturnarround,A = 9-0 = 9
Tturnarround,B = 4-0 = 4
Tturnarround,C = 12-5 = 7
Tturnarround,avg = 20/3 = 6.6

Tresponse,A = 4-0 = 4
Tresponse,B = 0-0 = 0
Tresponse,C = 9-5 = 4
Tresponse,avg = 8/3 = 2.6

Total = 9.2

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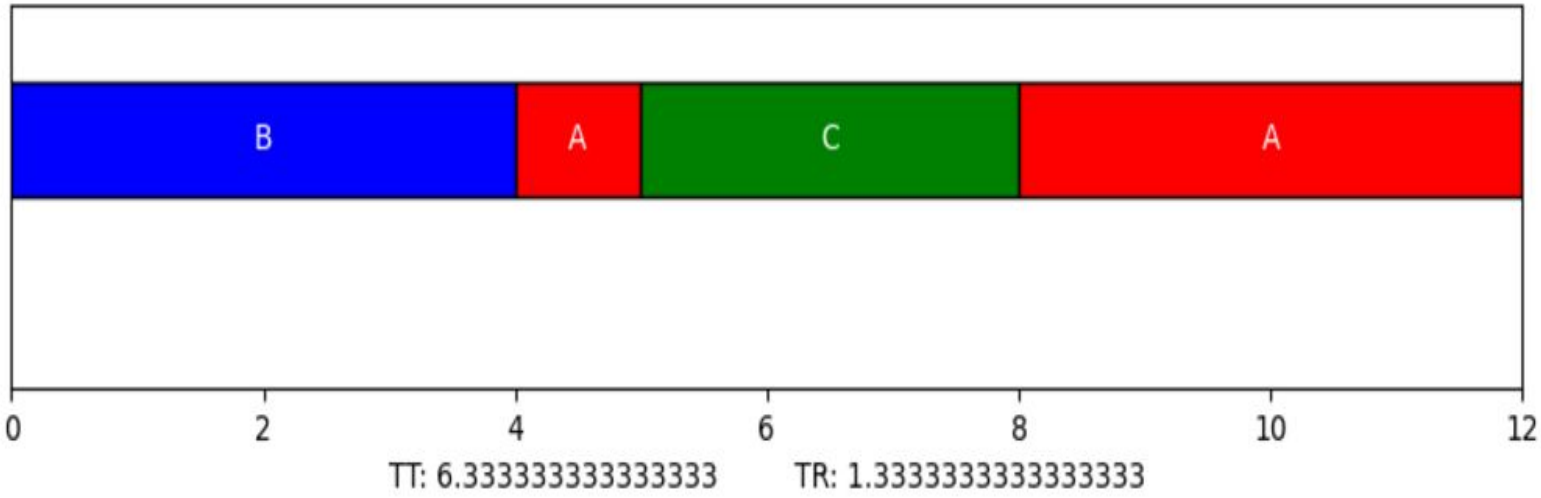
STCF(Shortest Time to Completion First)

Proceso	Arrival time	Run time
A	0	5
B	0	4
C	5	3



Tturnarround,A = 12-0 = 12
Tturnarround,B = 4-0 = 4
Tturnarround,C = 8-5 = 3
Tturnarround,avg = 19/3 = 6.3

Tresponse,A = 4-0 = 4
Tresponse,B = 0-0 = 0
Tresponse,C = 5-5 = 0
Tresponse,avg = 4/3 = 1.3

Total = 7.6

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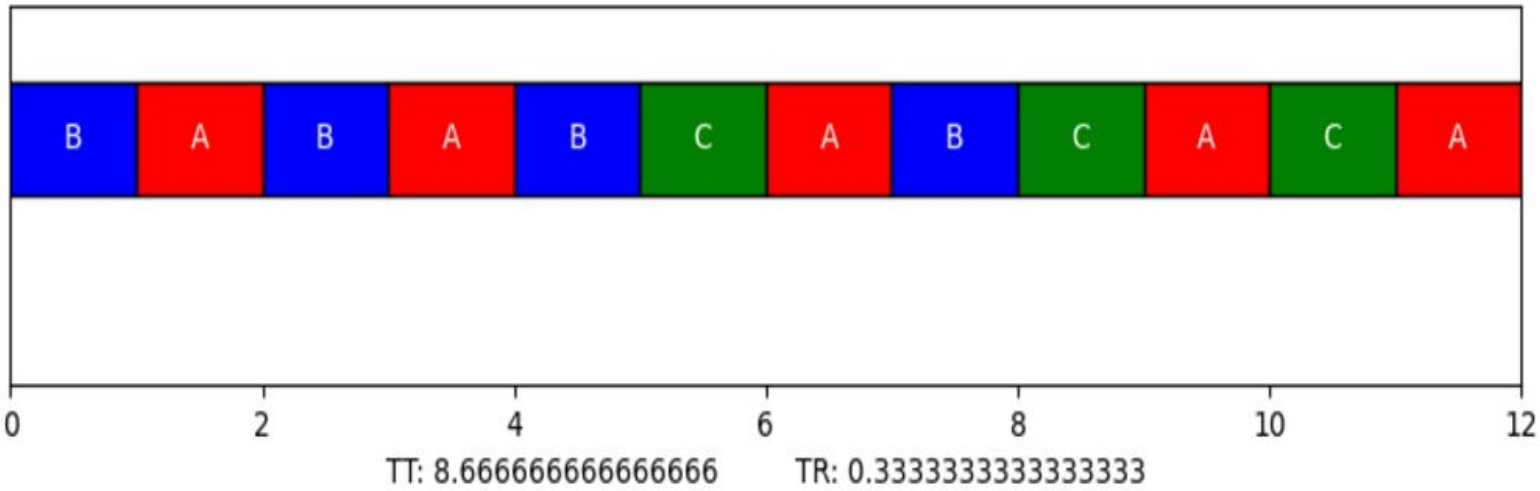
RR(Round Robin)

Proceso	Arrival time	Run time
A	0	5
B	0	4
C	5	3



Tturnarround,A = 12-0 = 12
Tturnarround,B = 8-0 = 8
Tturnarround,C = 11-5 = 6
Tturnarround,avg = 26/3 = 8.6

Tresponse,A = 1-0 = 1
Tresponse,B = 0-0 = 0
Tresponse,C = 5-5 = 0
Tresponse,avg = 1/3 = 0.3

Total = 8.9

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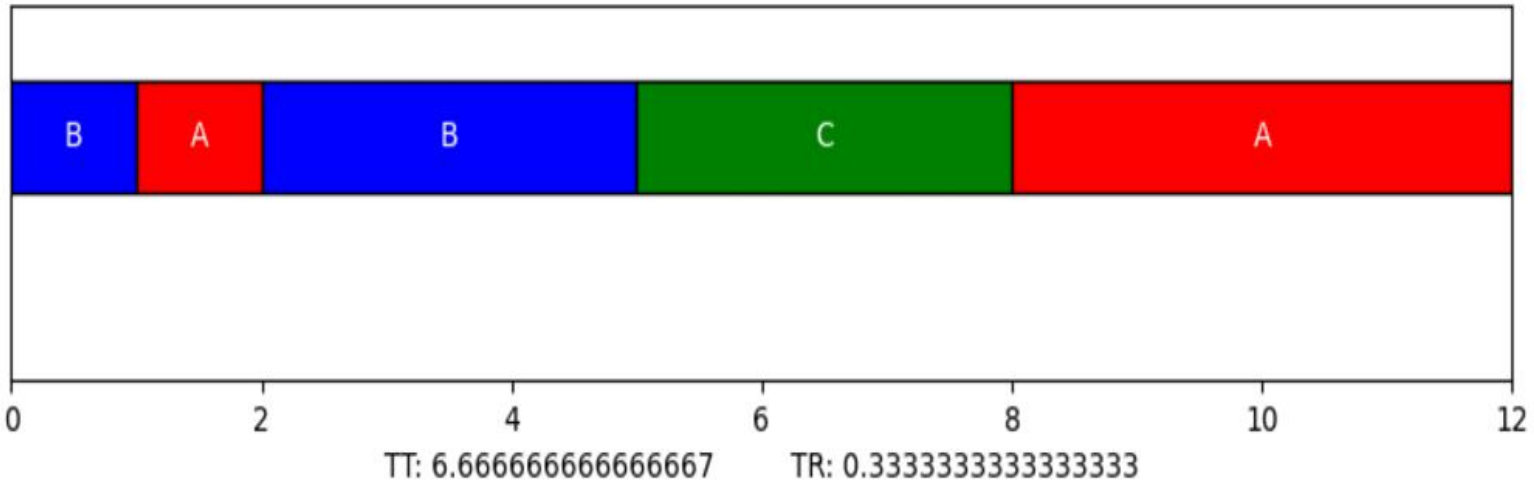
Modelo

Proceso	Arrival time	Run time
A	0	5
B	0	4
C	5	3



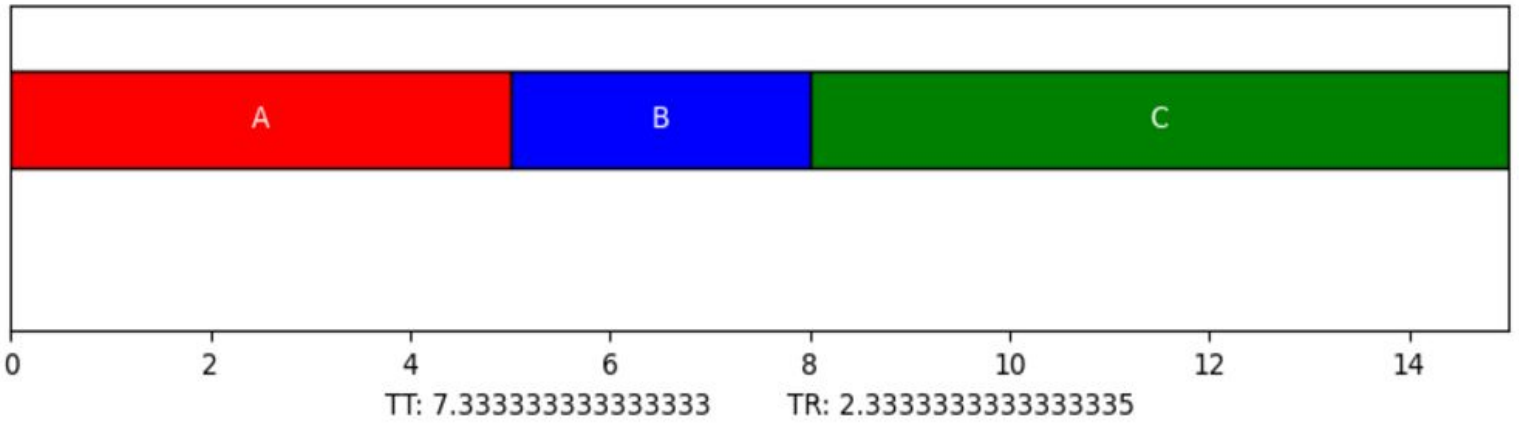
Tturnarround,A = 12-0 = 12
Tturnarround,B = 5-0 = 5
Tturnarround,C = 8-5 = 3
Tturnarround,avg = 20/3 = 6.6

Tresponse,A = 1-0 = 1
Tresponse,B = 0-0 = 0
Tresponse,C = 5-5 = 0
Tresponse,avg = 1/3 = 0.3

Total = 6.9

FCFS(First Come First Served)

Proceso	Arrival time	Run time
A	0	5
B	2	3
C	4	7



Tturnarround,A = 5-0 = 5
Tturnarround,B = 8-2 = 6
Tturnarround,C = 15-4 = 11
Tturnarround,avg = 22/3 = 7.3

Tresponse,A = 0-0 = 0
Tresponse,B = 5-2 = 3
Tresponse,C = 8-4 = 4
Tresponse,avg = 7/3 = 2.3

Total = 9.6

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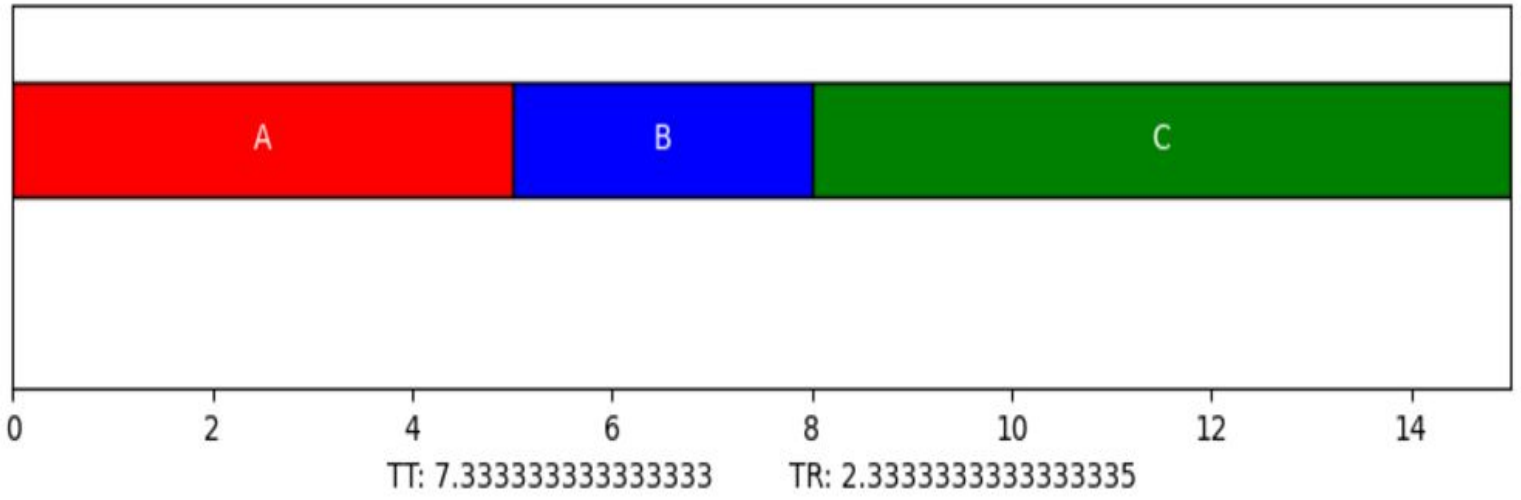
SJF(Shortest Job First)

Proceso	Arrival time	Run time
A	0	5
B	2	3
C	4	7



Tturnarround,A = 5-0 = 5
Tturnarround,B = 8-2 = 6
Tturnarround,C = 15-4 = 11
Tturnarround,avg = 22/3 = 7.3

Tresponse,A = 0-0 = 0
Tresponse,B = 5-2 = 3
Tresponse,C = 8-4 = 4
Tresponse,avg = 7/3 = 2.3

Total = 9.6

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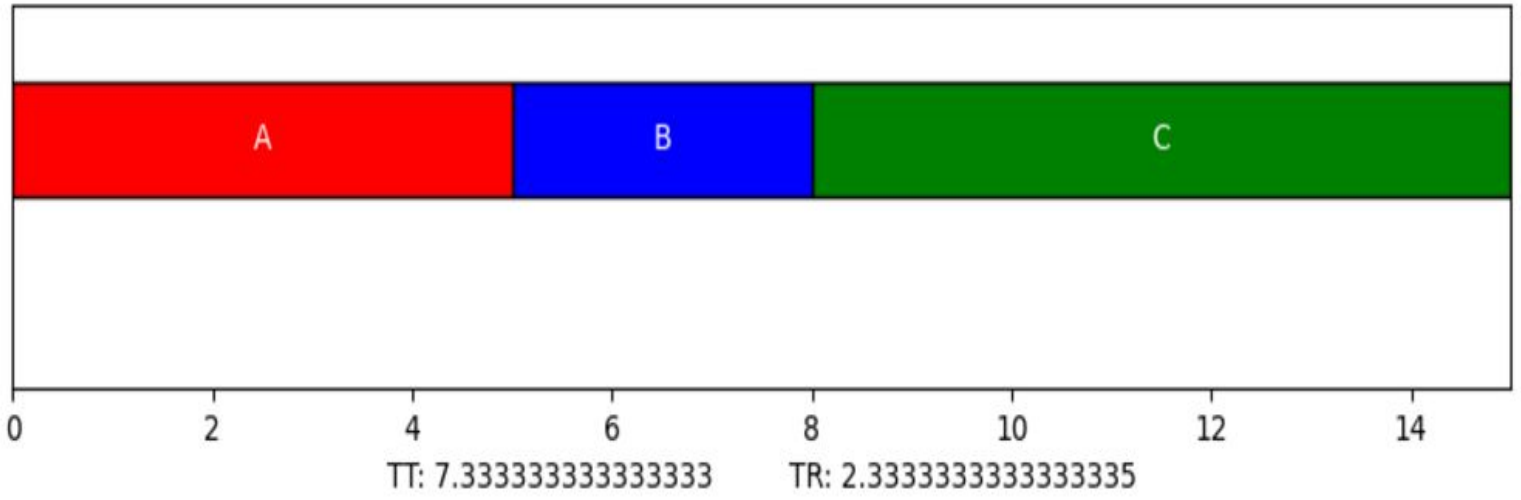
STCF(Shortest Time to Completion First)

Proceso	Arrival time	Run time
A	0	5
B	2	3
C	4	7



Tturnarround,A = 5-0 = 5
Tturnarround,B = 8-2 = 6
Tturnarround,C = 15-4 = 11
Tturnarround,avg = 22/3 = 7.3

Tresponse,A = 0-0 = 0
Tresponse,B = 5-2 = 3
Tresponse,C = 8-4 = 4
Tresponse,avg = 7/3 = 2.3

Total = 9.6

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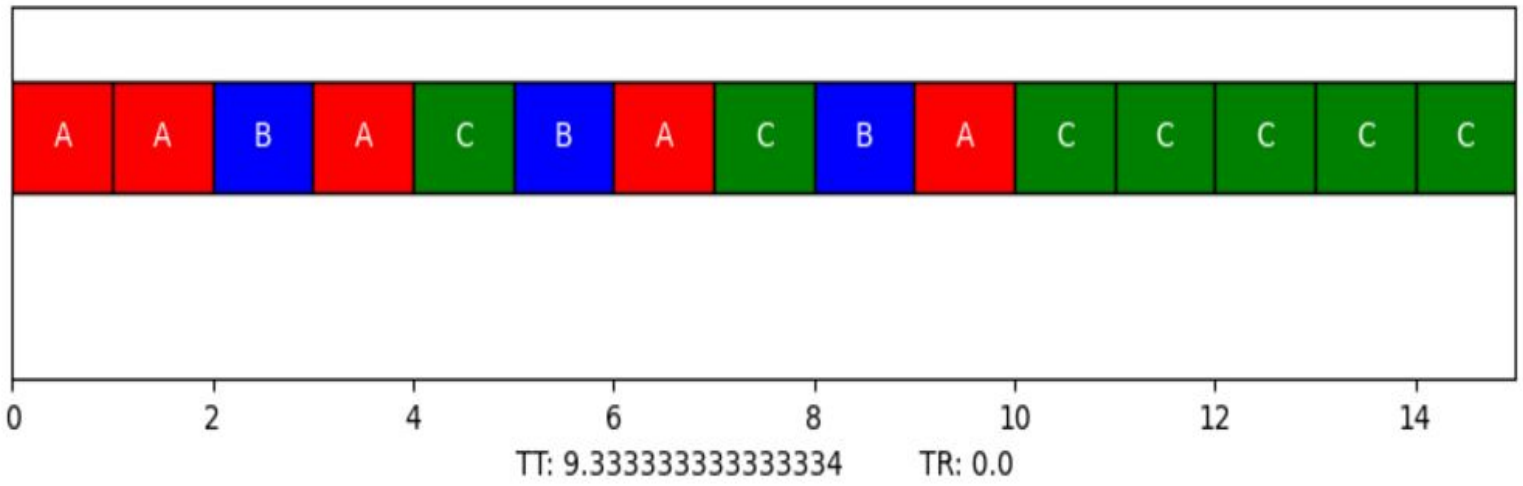
RR(Round Robin)

Proceso	Arrival time	Run time
A	0	5
B	2	3
C	4	7



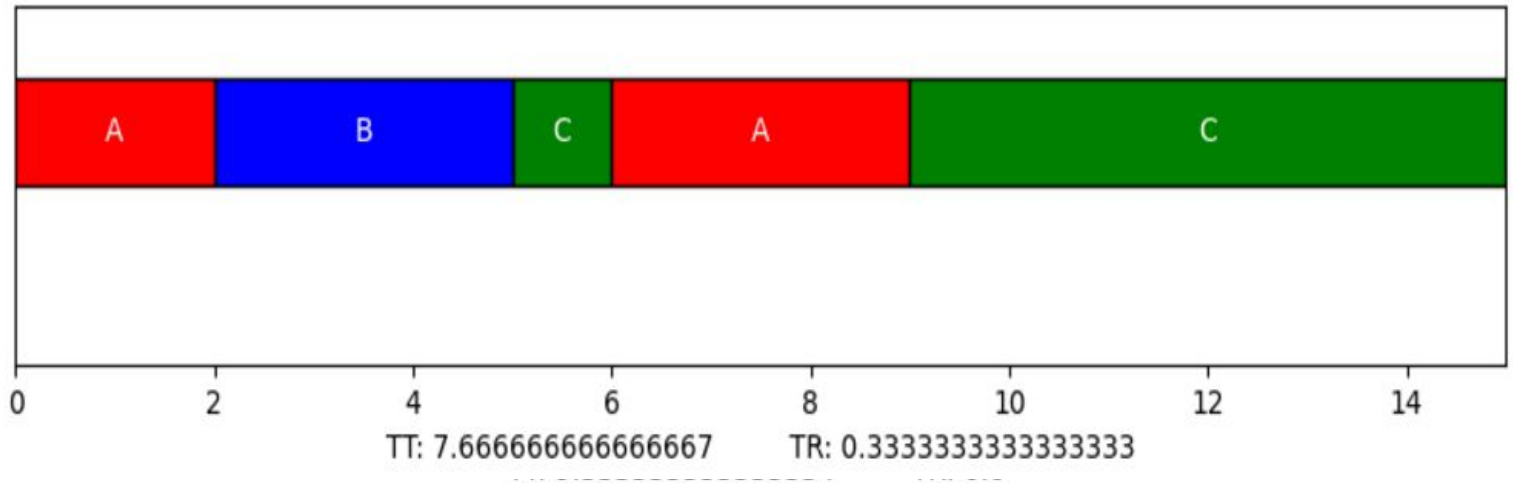
Tturnarround,A = 10-0 = 10
Tturnarround,B = 9-2 = 7
Tturnarround,C = 15-4 = 11
Tturnarround,avg = 28/3 = 9.3

Tresponse,A = 0-0 = 0
Tresponse,B = 2-2 = 0
Tresponse,C = 4-4 = 0
Tresponse,avg = 0/3 = 0

Total = 9.3

Modelo

Proceso	Arrival time	Run time
A	0	5
B	2	3
C	4	7



Tturnarround,A = 9-0 = 9
Tturnarround,B = 5-2 = 3
Tturnarround,C = 15-4 = 11
Tturnarround,avg = 23/3 = 7.6

Tresponse,A = 0-0 = 0
Tresponse,B = 2-2 = 0
Tresponse,C = 5-4 = 1
Tresponse,avg = 0/3 = 0.3

Total = 7.9

Código

https://colab.research.google.com/drive/13rbmYk6tEdietAjv32JV5Ak7K2BRf93A?usp=chrome_ntp#scrollTo=Z_lbxMOPlQdY&uniqifier=1

Muchas gracias