

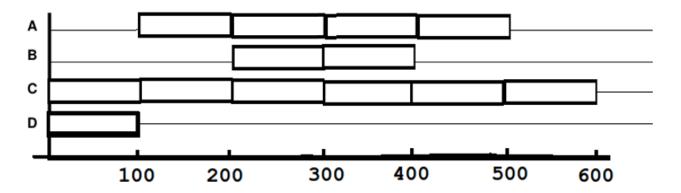
08 Sched - Schedulling Aneka Soal Ujian Sistem Operasi A. Wibisono (AW), C. BinKadal (CB) H. Kurniawan (HK)

© 2016 - 2023 — Rev: 44 - 23-Oct-2023. **URL:** https://rms46.vlsm.org/2/203.pdf. More can be accessed via https://os.vlsm.org/. This free document is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY, without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. You might change, reproduce, and distribute this document but not delete these provisions. This is the way!

1. **2016-1**

								K	ombina	si Mult	iprogram (%)				
	A	$A \mid B \mid C \mid D \mid A+B \mid A+C \mid A+D \mid B+C \mid B+D \mid C+D \mid A+B+C \mid A+B+D \mid A+C+D \mid B+C+D \mid A+B+C+D \mid A+B+C+D+D \mid A+B+C+D+D+C+D \mid A+B+C+D+D+D+D+D+D+D+D+D+D+D+D+D+D+D+D+D+D$														
Utilitas CPU per proses A	10	-	-	-	9.3	9.3	9.2	-	-	-	8.3	8.1	7.8	-	7	
Utilitas CPU per proses B	-	20	-	-	19	-	-	18	17	-	17	16	-	15	14	
Utilitas CPU per proses C	-	-	30	-	-	28	-	26	-	25	25	-	23	22	21	
Utilitas CPU per proses D	-	-	-	40	-	-	37	-	35	33	-	32	31	30	28	

Diagram berikut ini dibentuk menggunakan data tabel di atas.



- (a) Berapa waktu CPU (CPU TIME) dari proses "A"?
- (b) Berapa waktu CPU (CPU TIME) dari proses "B"?
- (c) Berapa waktu CPU (CPU TIME) dari proses "C"?
- (d) Berapa waktu CPU (CPU TIME) dari proses "D"?
- (e) Berapa waktu total (TOTAL TIME) dari proses "A"?
- (f) Circle or cross "T" if true, and "F" if false: [\mathbf{T} / \mathbf{F}] Priority scheduling prevents starvation.

2. **2016-2**

There exists four (4) identical processes, with this following CPU utilization table:

		Multipro	gramming Co	mbination $(\%)$
	A	A + A	A + A + A	A + A + A + A
CPU utilization per proses A	10	9.5	9	8.6

The CPU time of each processes is 43 seconds

Print the output when the system runs:

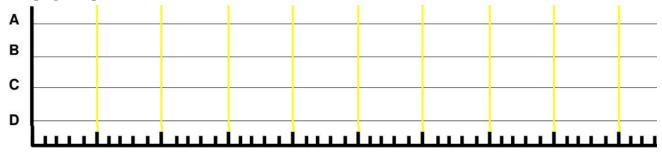
- (a) How long will be the total time to run concurrently all (4) processes together?!
- (b) How long will be the total time to run all (4) processes one by one?!

3. **2017-1**

								K	ombina	si Mult	iprogram (%)				
	A	$ \begin{smallmatrix} A \end{smallmatrix} \mid B \mid C \mid D \mid A+B \mid A+C \mid A+D \mid B+C \mid B+D \mid C+D \mid A+B+C \mid A+B+D \mid A+C+D \mid B+C+D \mid A+B+C+D \mid A+B+C$														
Utilitas CPU per proses A	10	-	-	-	9.3	9.3	9.2	-	-	-	8.3	8.1	7.8	-	7	
Utilitas CPU per proses B	-	20	-	-	19	-	-	18	17	-	17	16	-	15	14	
Utilitas CPU per proses C	-	-	30	-	-	28	-	26	-	25	25	-	23	22	21	
Utilitas CPU per proses D	-	-	-	40	-	-	37	-	35	33	-	32	31	30	28	

Proses A dan B berjalan sejak t=0. Proses C mulai berjalan saat waktu CPU (*CPU time*) proses B mencapai 38 satuan waktu. Proses A berhenti setelah proses C berjalan selama 200 satuan waktu. Proses D hanya dijalankan setelah proses A berhenti. Semua proses yang masih berjalan berhenti pada saat t=600.

(a) Lengkapi diagram berikut ini:



- (b) Berapa waktu CPU (CPU TIME) proses "A"?
- (c) Berapa waktu CPU (CPU TIME) proses "B"?
- (d) Berapa waktu CPU (CPU TIME) proses "C"?
- (e) Berapa waktu CPU (CPU TIME) proses "D"?
- (f) Berapa waktu total (TOTAL TIME) proses "A" berjalan?
- (g) Berapa waktu total (TOTAL TIME) proses "B" berjalan?
- (h) Berapa waktu total (TOTAL TIME) proses "C" berjalan?
- (i) Berapa waktu total (TOTAL TIME) proses "D" berjalan?

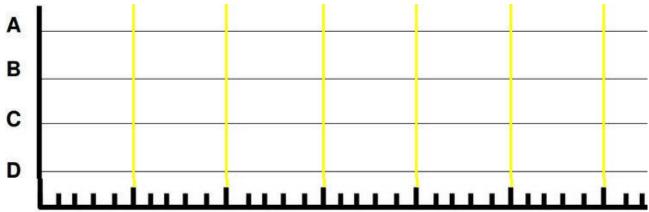
4. **2017-2**

Four (4) processes, A(90%, 14), B(80%, 60), C(70%, 64), D(60%, 161); where [W(X%, Y); W=process name; X=I/O Wait(%); Y=CPU Time] with this following CPU utilization table:

								Multi	prograi	nming	Combinatio	on (%)				
	A	A B C D A+B A+C A+D B+C B+D C+D A+B+C A+B+D A+C+D B+C+D A+B+C+D														
Process A CPU utilization	10	-	-	-	9.3	9.3	9.2	-	-	-	8.3	8.1	7.8	-	7	
Process B CPU utilization	-	20	-	-	19	-	-	18	17	-	17	16	-	15	14	
Process C CPU utilization	-	-	30	-	-	28	-	26	-	25	25	-	23	22	21	
Process D CPU utilization	-	-	-	40	-	-	37	-	35	33	-	32	31	30	28	

All processes (A, B, C, and D) terminates at t=500. Process D starts at t=0. Processes A, B, and C start after process D.

(a) Complete this following diagram:



- (b) Calculate at what time processes A, B, and C start!
- (c) How long will be the TOTAL TIME of process D, if the process (D) runs alone?

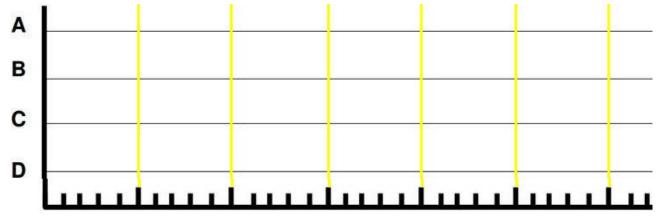
5. **2018-1**

Four (4) processes, A(46.8), B(17.0), C(53.0), D(37.0); where [X(Y); X = process name; Y = CPU Time] with this following CPU utilization table:

								Multi	prograi	nming	Combinatio	on (%)				
	A	A B C D A+B A+C A+D B+C B+D C+D A+B+C A+B+D A+C+D B+C+D A+B+C+C														
Process A CPU utilization	10	-	-	-	9.3	9.3	9.2	-	-	-	8.3	8.1	7.8	-	7	
Process B CPU utilization	-	20	-	-	19	-	-	18	17	-	17	16	-	15	14	
Process C CPU utilization	-	-	30	-	-	28	-	26	-	25	25	-	23	22	21	
Process D CPU utilization	-	-	-	40	-	-	37	-	35	33	-	32	31	30	28	

Processes A, B, and C start at t=0, and process D starts at t=300.

(a) Complete this following diagram, including the time of the X-axis!



- (b) What is the TOTAL TIME of process A?
- (c) What is the TOTAL TIME of process B, if the process runs alone?

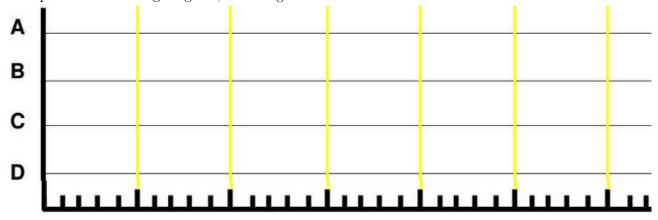
6. **2018-2**

Four (4) processes, A(460), B(540), C(280), D(320); where [X(Y); X = process name; Y = CPU Time] with this following CPU utilization table:

								Multi	iprograi	nming	Combinatio	on (%)				
	A	A B C D A+B A+C A+D B+C B+D C+D A+B+C A+B+D A+C+D B+C+D A+B+C+D														
Process A CPU utilization	10	-	-	-	9.3	9.3	9.2	-	-	-	8.3	8.1	7.8	-	7	
Process B CPU utilization	-	20	-	-	19	-	-	18	17	-	17	16	-	15	14	
Process C CPU utilization	-	-	30	-	-	28	-	26	-	25	25	-	23	22	21	
Process D CPU utilization	-	-	-	40	-	-	37	-	35	33	-	32	31	30	28	

Processes A, B, and D start at t=0, and process C starts at t=3000.

(a) Complete this following diagram, including the time of the X-axis!



(b) What is the TOTAL TIME of process A?

(c) What is the TOTAL TIME of process D, if the process runs alone?

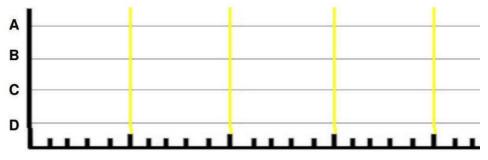
7. 2019-1 (82.8%)

Four (4) processes, A(286), B(360), C(280), D(350); where [X(Y); X = process name; Y = CPU Time] with this following CPU utilization table:

								Multi	prograi	nming	Combinatio	on (%)				
	Α	A B C D A+B A+C A+D B+C B+D C+D A+B+C A+B+D A+C+D B+C+D A+B+C+D														
Process A CPU utilization	10	-	-	-	9.3	9.3	9.2	-	-	-	8.3	8.1	7.8	-	7	
Process B CPU utilization	-	20	-	-	19	-	-	18	17	-	17	16	-	15	14	
Process C CPU utilization	-	-	30	-	-	28	-	26	-	25	25	-	23	22	21	
Process D CPU utilization	-	-	-	40	-	-	37	-	35	33	-	32	31	30	28	

Processes A and C: start at t=0; end before t=4000. Processes B and D: start after t=0; end at t=4000.

(a) (84%) Complete this following diagram, including the time of the X-axis!



- (b) (83%) What is the TOTAL TIME of process A?
- (c) (83%) What is the TOTAL TIME of process B?
- (d) (87%) What is the TOTAL TIME of process C?
- (e) (86%) What is the TOTAL TIME of process D? _____

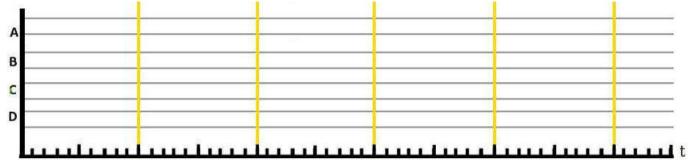
8. 2019-2 (76.0%)

Four (4) processes, A(314), B(830), C(420), D(880); where [X(Y); X = process name; Y = CPU Time] with this following CPU utilization table:

								Multi	iprograi	nming	Combinatio	on (%)			
	A	A B C D A+B A+C A+D B+C B+D C+D A+B+C A+B+D A+C+D B+C+D A+B+C+D													
Process A CPU utilization	10	-	-	-	9.3	9.3	9.2	-	-	-	8.3	8.1	7.8	-	7
Process B CPU utilization	-	20	-	-	19	-	-	18	17	-	17	16	-	15	14
Process C CPU utilization	-	-	30	-	-	28	-	26	-	25	25	-	23	22	21
Process D CPU utilization	-	-	-	40	-	-	37	-	35	33	-	32	31	30	28

All processes end at t=5000.

(a) Complete this following diagram, including the time of the X-axis (72%)!



- (b) What is the TOTAL TIME of process A (81%)?
- (c) What is the TOTAL TIME of process B (79%)?
- (d) What is the TOTAL TIME of process C (83%)?
- (e) What is the TOTAL TIME of process D (80%)?