

ACTIVITATE IN LABORATOR

Enunt

La o sedinta de laborator studentii trebuie sa scrie 3 programe.

Toti studentii sunt prezenti de la inceputul orei.

Activitatea pentru realizarea unui program se desfasoara astfel:

- pregatire program, timp de $1 + \text{norm}(5,1)$ minute
- rulare la orice consola disponibila timp de $5 + \text{expo}(15)$ minute
- in 40% din cazuri refac complet programul (in banca), timp de 1-15 minute si revin la consola, cu prioritate.

Cei care termina toate cele 3 programe parasesc sala inainte de expirarea celor 100 de minute afectate sedintei de laborator.

Rezolvare

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SIMULATE
* --- Simularea activitatii in laborator - Labor1.gps
      INTEGER      &NRS
      LET          &NRS=15
      STORAGE     S(CONS),12      Console disponibile

TOCUP  FUNCTION   PR,E2          Durata ocupare consola
0,RVEXPO(3,15)+5/1,FRN(5)*14+1

*-- Model:
      GENERATE    ,,,&NRS,,1PB   Toti studentii prezenti de la inceput
PREG   ASSIGN    IP+,1,PB       IP - Indicele programului pregatit
      PRIORITY    0
      ADVANCE     RVNORM(2,5,1)+1 Pregatire program
UTIL   QUEUE     COADA          Asteapta sa ocupe consola
      ENTER      CONS           Ocupare consola
      DEPART     COADA
      ADVANCE     FN(TOCUP)      Utilizare consola
      LEAVE      CONS           Parasire consola
      TRANSFER   .4,COREC,TESTSF Sunt necesare corecturi ?

* --- corecteaza
COREC  ADVANCE   6,5            Corecteaza
      PRIORITY   PR+1          Creste prioritatea
      TRANSFER   ,UTIL

* --- program corect
TESTSF TEST E      PB(IP),3,PREG A terminat toate programele ?
      TERMINATE

* --- control durata simulare
      GENERATE   100
      TERMINATE  1

* --- executie experiment simulare
      START     1
      END
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SIMULATE

*-- Simularea activitatii in laborator - Labor2.gps - statistici suplimentare

INTEGER	&NRS	Numar studenti
LET	&NRS=15	
STORAGE	S(CONS),12	Console disponibile
TOCUP	FUNCTION PR,E2	Durata ocupare consola

0,RVEXPO(3,15)+5/1,FRN(5)*14+1

*-- Statistici suplimentare

NRP	MATRIX	MB,&NRS,3	Numar rulari pt.fiecare program
TCALC	MATRIX	ML,&NRS,3	Timp calculator pt.fiecare program
TOTAL	MATRIX	ML,&NRS,3	Timp total pt.fiecare program
GROCUP	TABLE	M1,5,5,8	Repartitia timpilor de ocupare consola
TCOADA	QTABLE	COADA,1,2,7	Repartitia timpilor de asteptare

*-- Model

NRG	GENERATE	,,,&NRS,,2PB	Toti studentii prezenti de la inceput
	ASSIGN	IST,N(NRG),PB	IST - Indicele studentului
PREG	ASSIGN	IP+,1,PB	IP - Indicele programului pregatit
	PRIORITY	0	
	MARK		
	ADVANCE	RVNORM(2,5,1)+1	Pregatire program
UTIL	MSAVEVALUE	NRP+,PB(IST),PB(IP),1,MB	Creste numar rulari
	QUEUE	COADA	Asteapta sa ocupe consola
	ENTER	CONS	Ocupare consola
	DEPART	COADA	
	MSAVEVALUE	TOTAL+,PB(IST),PB(IP),M1,ML	
	MARK		Marcheaza inceput rulare
	ADVANCE	FN(TOCUP)	Utilizare consola
	LEAVE	CONS	Parasire consola
	MSAVEVALUE	TCALC+,PB(IST),PB(IP),M1,ML	
	MSAVEVALUE	TOTAL+,PB(IST),PB(IP),M1,ML	
	TABULATE	GROCUP	
	MARK		Marcheaza parasire consola
	TRANSFER	.4,COREC,TESTSF	Sunt necesare corecturi ?

* --- corecteaza

COREC	ADVANCE	6,5	Cauta greseala
	PRIORITY	PR+1	Creste prioritatea
	TRANSFER	,UTIL	

* --- program corect

TESTSF	TEST E	PB(IP),3,PREG	A terminat toate programele ?
	TERMINATE		

* --- control durata simulare

GENERATE	100
TERMINATE	1

* --- executie experiment simulare

START	1
END	

--- Extras din fisierul Labor2.lis -----

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RELATIVE CLOCK: 100.0000 ABSOLUTE CLOCK: 100.0000

BLOCK	CURRENT	TOTAL	BLOCK	CURRENT	TOTAL	BLOCK	CURRENT	TOTAL
NRG		15 11			65 21			30
2		15 12			65 22			30
PREG		37 13	5		65 TESTSF			27
4		37 14			60 24			5
5		37 15			60 25			1
6	2	37 16			60 26			1
UTIL		65 17			60			
8		65 18			60			
9		65 19			60			
10		65 COREC	3		33			

--AVG-UTIL-DURING--

STORAGE	TOTAL	AVAIL	UNAVL	ENTRIES	AVERAGE	CURRENT	PERCENT	CAPACITY	AVERAGE	CURRENT
MAXIMUM					TIME/UNIT	STATUS	AVAIL		CONTENTS	CONTENTS
CONTENTS										
CONS	0.787			65	14.525	AVAIL	100.0	12	9.441	5
12										

QUEUE	MAXIMUM	AVERAGE	TOTAL	ZERO	PERCENT	AVERAGE	\$AVERAGE	QTABLE
CURRENT								
CONTENTS	CONTENTS	CONTENTS	ENTRIES	ENTRIES	ZEROS	TIME/UNIT	TIME/UNIT	NUMBER
COADA	3	0.433	65	50	76.9	0.666	2.886	TCOADA
0								

TABLE GROCUP

ENTRIES	IN TABLE	MEAN ARGUMENT	STANDARD DEVIATION	SUM OF ARGUMENTS	NON-WEIGHTED	
	60.0000	14.8571	11.6890	891.4234		
UPPER	OBSERVED	PERCENT	CUMULATIVE	CUMULATIVE	MULTIPLE	DEVIATION
LIMIT	FREQUENCY	OF TOTAL	PERCENTAGE	REMAINDER	OF MEAN	FROM MEAN
5.0000	6.0000	10.0000	10.00	90.00	0.3365	-0.8433
10.0000	21.0000	35.0000	45.00	55.00	0.6731	-0.4155
15.0000	17.0000	28.3333	73.33	26.67	1.0096	0.0122
20.0000	3.0000	5.0000	78.33	21.67	1.3462	0.4400
25.0000	2.0000	3.3333	81.67	18.33	1.6827	0.8677
30.0000	3.0000	5.0000	86.67	13.33	2.0192	1.2955
35.0000	3.0000	5.0000	91.67	8.33	2.3558	1.7232
OVERFLOW	5.0000	8.33	100.00	0.00		

AVERAGE VALUE OF OVERFLOW IS 43.7282

TABLE TCOADA

ENTRIES	IN TABLE	MEAN ARGUMENT	STANDARD DEVIATION	SUM OF ARGUMENTS	NON-WEIGHTED	
	65.0000	0.6660	1.7884	43.2906		
UPPER	OBSERVED	PERCENT	CUMULATIVE	CUMULATIVE	MULTIPLE	DEVIATION
LIMIT	FREQUENCY	OF TOTAL	PERCENTAGE	REMAINDER	OF MEAN	FROM MEAN
1.0000	57.0000	87.6923	87.69	12.31	1.5015	0.1868
3.0000	2.0000	3.0769	90.77	9.23	4.5044	1.3051
5.0000	1.0000	1.5385	92.31	7.69	7.5074	2.4234
7.0000	4.0000	6.1538	98.46	1.54	10.5104	3.5417
9.0000	1.0000	1.5385	100.00	-0.00	13.5133	4.6600

BYTE MATRIX SAVEVALUE NRP

ROW/COL	1	2	3
1	6	0	0
2	2	1	2
3	4	1	0
4	4	1	0
5	1	2	1

6	2	1	1
7	3	1	0
8	1	2	1
9	1	1	2
10	1	2	1
11	4	0	0
12	3	2	0
13	1	1	2
14	1	2	0
15	2	2	0

FLOATING POINT MATRIX SAVEVALUE TCALC

ROW/COL	1	2	3
1	54.0062	0.	0.
2	17.5640	18.8031	13.0502
3	54.8972	6.5357	0.
4	52.4821	0.	0.
5	8.6766	32.8562	9.7551
6	21.4097	41.9356	0.
7	47.5948	0.	0.
8	7.5007	26.0453	13.6889
9	12.5101	14.6330	36.1842
10	14.6782	37.9031	10.0769
11	68.5385	0.	0.
12	38.5027	12.3796	0.
13	7.1385	14.0805	42.6974
14	24.2583	53.9116	0.
15	38.4962	38.6330	0.

FLOATING POINT MATRIX SAVEVALUE TOTAL

ROW/COL	1	2	3
1	97.9661	0.	0.
2	31.1109	24.9677	23.2573
3	80.7268	13.8390	0.
4	75.5858	7.3595	0.
5	14.6662	49.1835	16.6403
6	38.9652	47.6490	6.2998
7	81.4301	5.8944	0.
8	13.8040	37.5620	19.9238
9	18.6344	27.2209	49.8022
10	28.4823	53.4204	15.9127
11	93.1065	0.	0.
12	64.4089	21.3622	0.
13	12.5882	21.0564	53.7865
14	31.2222	67.1216	0.
15	50.2839	46.2006	0.