Simulator pentru alocarea memoriei – documentație

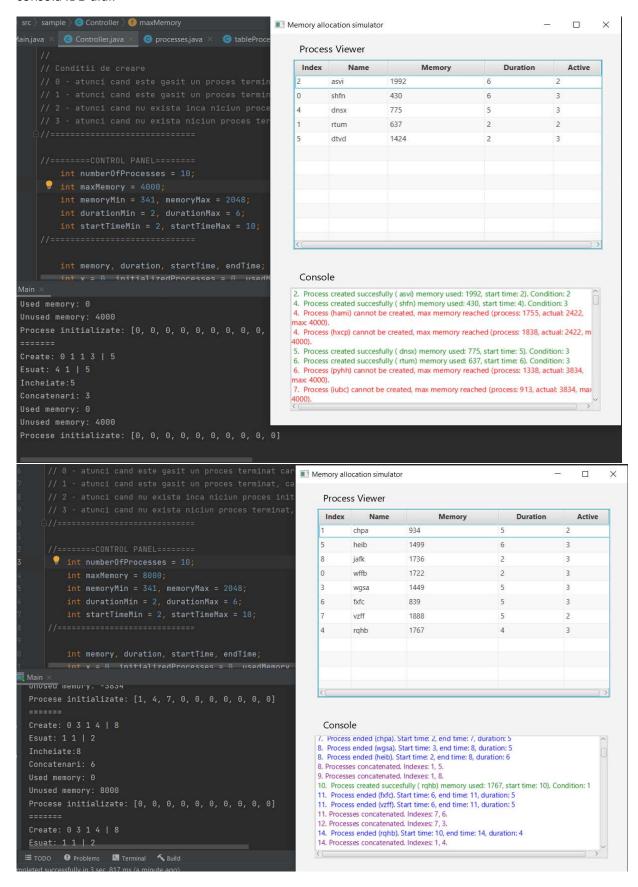
Simulatorul a fost realizat utilizand JavaFX in principal datorită interfeței grafice care oferă o înțelegere mai amplă și o supraveghere mai simplă a proceselor.

Aplicația conține un controller și două clase de obiecte (unul principal, iar altul folosit în afișarea proceselor active în tabel).

Procesele sunt create la inițializarea programului, numărul acestora putând fi modificat din panoul de control, împreună cu "memoria totală" a sistemului și variabilele ce definesc valorile minime și maxime pentru memoria, durata și momentul de pornire al fiecărui proces (care primesc valori random, in functie de aceste minime si maxime). Numele proceselor sunt generate de o metodă ce dă un string random de 4 litere.

Întreaga aplicație este pusă în mișcare de un timer, care în fiecare secundă apelează metoda "checktTime()", responsabilă cu crearea și oprirea proceselor. Tot în cadrul acestei metode sunt apelate metodele pentru concatenarea segmentelor de memorie vecine ramase inactive ("concatenateMemory()"), shiftarea elementelor array-ului ce contine variabilele "index" ale proceselor ce au statusul 1(activ) sau 2(terminat, asteptand concatenare sau reocuparii segmentului de memorie folosit)("initializedShifting"), crearea unui nou proces ("createProcess()"), sau afisarea mesajelor de eroare ("processError()"). În fiecare secundă după inițializarea programului și crearea proceselor, în metoda checkTime, prin intermediul timer-ului fiecare proces este verificat pentru eventualitatea îndeplinirii condiției de pornire (startTime == x, având însă 4 condinții diferite în care poate porni), respectiv oprire (endTime == x).

Având ca setări valorile ce pot fi văzute în control panel, rezultatele în urma rulării pot fi observate în consola IDE-ului.



```
int memoryMin = 341, memoryMax = 2048;
         int x = 0, initializedProcesses = 0, usedMem
Procese initializate: [0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
Used memory: 0
Unused memory: 8000
FSUAT: 16 3 | 19
≣ TODO ❸ Problems      Terminal   〈 Build
```

Memory allocation simulator

Process Viewer

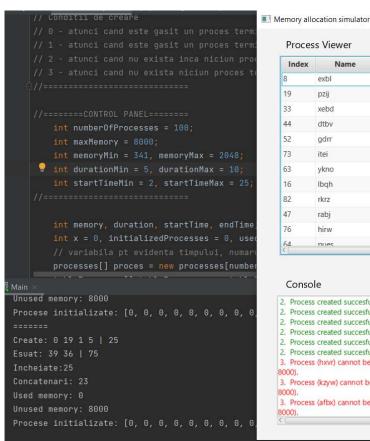
Index	Name	Memory	Duration	Active
4	syak	1545	10	2
9	pdpu	1337	6	3
22	qjsk	1468	5	3
23	bduz	1955	8	3
25	agyo	1176	6	3
0	zfzb	358	5	3
6	Idlo	379	5	2
8	kiox	711	8	3
21	nldu	1261	5	3
12	sbfj	388	6	3
1	hszt	737	5	3

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X

Console

- 2. Process created succesfully (syak) memory used: 1545, start time: 2). Condition: 2
- Process created succesfully (pdpu) memory used: 1337, start time: 2). Condition: 3
- 2. Process created succesfully (qisk) memory used: 1468, start time: 2). Condition: 3
 2. Process created succesfully (bduz) memory used: 1955, start time: 2). Condition: 3
- 2. Process created succesfully (agyo) memory used: 1176, start time: 2). Condition: 3
- 2. Process (qavw) cannot be created, max memory reached (process: 1227, actual: 7481,
- max: 8000). 3. Process (qysn) cannot be created, max memory reached (process: 1463, actual: 7481, m
- 8000). 3. Process (yhrz) cannot be created, max memory reached (process: 618, actual: 7481, max
- 8000).
- 4. Process created succesfully (zfzb) memory used: 358, start time: 4). Condition: 3



Process Viewer

Index	Name	Memory	Duration	Active
8	exbl	520	9	2
19	pzij	725	6	3
33	xebd	1926	5	3
44	dtbv	1636	9	3
52	gdrr	940	8	3
73	itei	1869	5	3
63	ykno	1543	7	3
16	lbqh	753	6	3
82	rkrz	557	9	3
47	rabj	1197	7	3
76	hirw	463	5	3
64	nues	745	6	3

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X

X

Console

- 2. Process created succesfully (exbl) memory used: 520, start time: 2). Condition: 2
- Process created succesfully (pzij) memory used: 725, start time: 2). Condition: 3
 Process created succesfully (xebd) memory used: 1926, start time: 2). Condition: 3
 Process created succesfully (dtbv) memory used: 1636, start time: 2). Condition: 3

- 2. Process created succesfully (gdrr) memory used: 940, start time: 2). Condition: 3
- 2. Process created succesfully (itei) memory used: 1869, start time: 2). Condition: 3
- 3. Process (hxvr) cannot be created, max memory reached (process: 434, actual: 7616, max
- 3. Process (kzyw) cannot be created, max memory reached (process: 799, actual: 7616, ma 8000).
- 3. Process (afbx) cannot be created, max memory reached (process: 641, actual: 7616, max 8000).



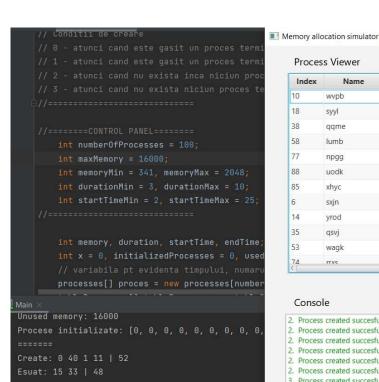
Used memory: 1361 Unused memory: -16528

Memory allocation si	mulator
Process View	er

Index	Name	Memory	Duration	Activ	е
76	qhac	1605	8	2	î
83	dgna	1733	5	3	
3	nrbw	829	5	3	
21	ktih	746	6	3	
43	ebst	1609	10	2	9
55	fwga	1258	3	3	
25	hldc	518	7	3	
86	wqzy	735	7	3	
94	hqpl	602	5	3	
97	apca	636	10	3	
75	gagt	590	8	3	
78	uumd	554	3	3	~

Console

- 2. Process created successfully (qhac) memory used: 1605, start time: 2). Condition: 2
- Process created succesfully (dgna) memory used: 1733, start time: 2). Condition: 3
 Process created succesfully (nrbw) memory used: 829, start time: 3). Condition: 3
- Process created succesfully (ktih) memory used: 746, start time: 3). Condition: 3
- 3. Process created succesfully (ebst) memory used: 1609, start time: 3). Condition: 3
 3. Process created succesfully (fwga) memory used: 1258, start time: 3). Condition: 3
- 3. Process (gnsp) cannot be created, max memory reached (process: 1927, actual: 7780,
- max 8000).
- 3. Process (xojw) cannot be created, max memory reached (process: 1984, actual: 7780, m
- 4. Process (gucm) cannot be created, max memory reached (process: 1937, actual: 7780, max 8000).



Process Viewer

Index Memory Duration Active dqvw 1642 8 18 1577 8 3 38 aame 1285 10 3 58 lumb 1635 9 3 77 1772 3 88 uodk 1437 6 3 85 715 10 3 6 646 6 3 14 752 35 qsvj 931 8 3 53 wagk 1351 3 1992

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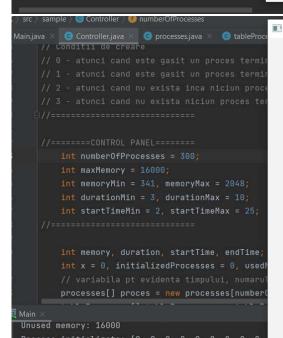
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Console

- 2. Process created succesfully (wvpb) memory used: 1642, start time: 2). Condition: 2
- Process created succesfully (syyl) memory used: 1577, start time: 2). Condition: 3
- Process created succesfully (qqme) memory used: 1285, start time: 2). Condition: 3
- 2. Process created succesfully (lumb) memory used: 1635, start time: 2). Condition: 3 Process created succesfully (npgg) memory used: 1772, start time: 2). Condition: 3
- Process created succesfully (uodk) memory used: 1437, start time: 2). Condition: 3
- 3. Process created succesfully (xhyc) memory used: 715, start time: 3). Condition: 3 4. Process created succesfully (sxin) memory used: 646, start time: 4). Condition: 3
- Process created succesfully (yrod) memory used: 752, start time: 4). Condition: 3
- 4. Process created succesfully (qsvj) memory used: 931, start time: 4). Condition: 3

- 4. Process created succesfully (wagk) memory used: 1351, start time: 4). Condition: 3
 4. Process created succesfully (rrxs) memory used: 1992, start time: 4). Condition: 3



Procese initializate: [0, 0, 0, 0, 0, 0, 0, 0, 0

Used memory: 0

Unused memory: 16000

Create: 0 58 1 14 | 73

Used memory: 0 Unused memory: 16000

Memory allocation simulator **Process Viewer**

Index	Name	Memory	Duration	Active
0	oeir	1208	5	3
9	axhe	447	6	3
13	gvwv	1434	5	3
60	cbuw	873	7	3
117	bkrq	1913	10	3
142	jpfe	1019	5	3
150	dfyu	627	5	3
171	ptia	504	4	3
235	mefj	1630	3	3
251	omln	560	10	3
3	wbpv	1145	9	3
20	zInt	748	Δ	2

Console

- 2. Process created succesfully (oeir) memory used: 1208, start time: 2). Condition: 2
- 2. Process created succesfully (axhe) memory used: 447, start time: 2). Condition: 3
- 2. Process created succesfully (gvwv) memory used: 1434, start time: 2). Condition: 3
- 2. Process created succesfully (cbuw) memory used: 873, start time: 2). Condition: 3
 2. Process created succesfully (bkrq) memory used: 1913, start time: 2). Condition: 3
- 2. Process created succesfully (jpfe) memory used: 1019, start time: 2). Condition: 3
- 2. Process created succesfully (dfyu) memory used: 627, start time: 2). Condition: 3
 2. Process created succesfully (ptia) memory used: 504, start time: 2). Condition: 3
- 2. Process created succesfully (mefj) memory used: 1630, start time: 2). Condition: 3
- 2. Process created succesfully (omln) memory used: 560, start time: 2). Condition: 3
 3. Process created succesfully (wbpv) memory used: 1145, start time: 3). Condition: 3
- 3. Process created succesfully (zlpt) memory used: 748, start time: 3). Condition: 3

