

LABORATORY WORK BOOK

Name of the Student N. Ravi Chandrika						Roll Number				
CI	ass	CSD_BSomester	(Box	Semes	le:				T	HMACHIN
		de				239	5 1 9	6 1	B 3	3
		e Course Faculty				**********	Faculty ID :.	IDRE	109	7.1
Exe	ercise Nu	ımber :4		k Number :.	41		Date :?	19/20	1	nes
	Exercise Number	EXERCISE NAME		,	MARK	(S AWARDED				
S. No.			Aim/ Preparation			Source Code Calculations and Graphs	Program Execution Results and Error Analysis	- VIVA -	То	ital
			4		4		4 .	4	2	0
1	49	Memory variable Technique	4	9	م الم	U	1343	4	7	9
2	4.2	But lit memory Allomation	4	2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	E	2	4	1.5	7
3	4.3	Worst lit memory Allocation		9	11 15 11 15 15 1	iu	Ţ,	L	21	0
4	4.4	Multipagramming we a		2	2	. 10	CD	11	2	
5	4.5	simulating paging memory management	4	1412	7	11			2	Ē
6		y Gero - F.	da v	[· · · ·]	a in the	a transaction	- Clore	- - 1		
7	5.4	1 - 12 (Tkindille) 1	and the ti	n si	er (a)					(
8					pertus	* 15. 11	V	-		
9		The second second	780	1142	iliya, 4	of Fig.				
10	ч		Pa.,	11.65	- [Than	Tray.				
11		15.66 (17.11.11)	is j'Ys	i hi . n.	70.77	ping (4	1.1		
12		2 4 700 1141 20 21	i Win.	(T.)	r halese	174 7 7 14	let) - LT	.7	1	

N. Ravi Chandika.
Signature of the Student

Signature of the Faculty

 $x_i \in f(x_i)$

```
4-1
```

Amo: You are a cyclem administrator suspensible for managing a computer system that employs the memory variable technique for memory introgement, your system occasives suspensible hum multiple uses to sun different processes, each susquising a specific amount of memory.

Code:

class Memory Variable Technique:

dy -init - (sey, participants):

scy-partitions - partitions

sey memory - map = }

: 1: [Palse] * participants[1],

2: [false] * participants[2],

3: (false) * participants[3],

પુ

Self-processes = 9 3

dy alocate-memory (sey, processid, size):

to partition_ad, partition in sul-memory_map. items ():

it len (partition) == Size and all (not partition[i] for i in range (Size)):

Allocate membry

for i in range (Size):

partition[i] = Touc

sey-procenes[procen-id] & (partition-id, size)

print ("1" Allocated & size's units of memory.")

octun.

print (f" Falled to allocate & size & unit of memory.")

```
dy deallocate-memory (sey, process-id):
         it pacessid in self processes:
            partition-id, size = self-processes (process-id)
            for i in range (size):
               scy. memory-map(partitionid)(i) = falk
           del sey-processes [process-td]
          print (+" Deallocated memory for process & process-id 3.")
        elx:
          print(1" Bocess & process-id} not lound.")
   dy display-memory-Status(sey); bolishing to
       tor partition-id, partition in sey-memory-map items ():
         allocated-units = Sum (partition)
                                         And we all a software day
         total-units = lun(partition)
         print(i" Partition & partition - id): Units allocated.")
myt = Memory Variable Technique ($1:300, 0:500, 3: 1004)
mrt. allocate _ memory (1, 150)
                                                        (Within min)
mrt-allocate-memory (2,400)
mvt-allocate-memory (3,100)
mytodisplay-memory-statusco
mut · deallocate: memory (2)
print ("In After deallocating Process 2:")
mit · display-memory-status
                                    remove that I thank the comment of the trans
Output: Allocated iso units of memory for process in partition 1
                                    Allow hould not the key
```

Allocated 400 units of memory les process a in partition 2. Allocated no units of memory for process 3 in partition 3.

partition 1: 150/300 units allocated.

partition a: acoleo units allocated

partitions: 100/200 units allocated

responsted wimand les baccens.

After diallerating process a:

Partition 1: 150/300 units allocated

partition 2: 0/100 units allocated

partition 3: 100/200 units allocated.

Arm: You are a software developer working on an operating system project that required implementing memory management techniques. One of the Crucial algorithm is best fit algorithm, which aims to allocate memory blocks to proceed in a way that minimizes wartage and tragmentation. (60年,至) 自己可用,美国国际。

Code:

4-3

class Bestfit Memory Manager:

dy -init- (self, memory-blocks):

self-memory-blocks = memory-blocks

sey-available-blocks = & i: block for i, block in enumerate))

sul-processe = {}

dy allocate-memory (sey, porocess-jd, size):

best-fit-index = None

best-lit-size = float("in")

```
for index, block in sey-available-blocks-itemsed;
        If block >= Size and (block a best-/it-size):
           best-lit-size = block
          best-fit-index = index
       if best-fit-index is Not None:
         sey-processes [process-1d] = 572c
         sey. available blocks[best-fra-index] -= Size
        print(7" Allocated & size & units of memory-")
        Loc:
point (f" failed to allocate & size? units of memory")
       else:
dy deallocate-memory (sey, process-id):
                              LANGE HELD OF THE LANGE.
   it process-id in sey processes:
      size = sey- procènes [procensid]
     for index, block in sey, available-blocks. items():
        of block & sey. memory-blocks [index):
          self-available-blocks (indea) + = size
          du self-processes (process- rd)
         print (f" Deallocated memory for process & process = id 3:")
         retun
     print (f" Process & process-id 3 not found-")
                                    ( - April 1) 1 (1:1) 11:11
 else:
    print(+" Process & process-id's not /ound.")
print("In Memory Status:")
                              In strongly strong of solar property
   for index, block in Sey-available_blocks. itemses:
```

total-size = self-memory-blocks (index)
alloaded-size = total-size - block
printlet Buck & indon 3: & allocated-size / fedal, size / ")

memory-manager = Best Fill a emory Manager ((100,000, 50, 100, 200,200,000)

memory-manager-allocati-memory (1,700)

memory-manager-allocati-memory (3,200)

memory-manager-allocati-memory (3,200)

memory-manager-display-memory-status

memory-manages. deallocate-memory(a)
print("In Alter challocating process a:")
memory-manages. display-memory-Status).

Output:

Allocated to units of memory for porcess 2 in Block 1.
Allocated to units of memory for poocess a in Block 1.
Allocated anounits of memory for process 3 in Block 4.

Haraka di Kal

Memory Status:

Block 0: 0/100 units allocated

Block 1:190/200 units allocated

Block 2: 0/50 units allocated

Book 3: 0100 unils allocated

Block u: 2001 sto units all voted

Backs: 70/50 units allocated

Block 6: of 100 units all crated

Sloce 7: 0/200 units allocated

Deallocated memory let process 2.

Cranic Carried Tyles

After deallocating process a:

Block o: b/100 units etrallocated

etax 1: place units allocated

Block 1: 0/10 units allocated

Block 3: 0/140 units allocated

Blocku: a so/300 units allocated

Blocks: 70/80 units allocated

Blocks: 0/120 units allocated

Blocka; of 200 units allocated.

-Aim: You are a system analyst tasked with disgring the membay management techniques for a new operating system. One of the techniques to implement is worstfit memory allocation algorith which priortizes allocating the largest available memory block to t processes. China the fire around a terms this day

continuenti di had a element princis class Bestfit Memory Manager:

sely. available_block = &i: block for i, block in enumerate (memory) self-memory-blocks = memory-blocks

34. processes = & } Dates

DOMAN - Princip of Carin - Princip dy allocate-memory (sey, proces-id, size):

best-fit-index = None

best-fit - size = float(ini)

tor index, Block in gey-available-blocks-items():

if block > = size and Chack < best-lit-520;

Thurs will stablish to be a "Italia"

but-lit-size = block bet-lit-inden = inden if best-fit-index is not None: self-processes[process-id] = (best-fit-indeas size) sey-available-block = (best-lit-indem) -= size print (t" Allocated & size if units of memory ") else: print (4" Failed to allocate forzed units of memory-") dy deallocate_memory(Sey, process_id): if process-id in self-processes: best-fra-inden, Size = Sey-processes [process-id] Self-available blocks [best-fit-index] + = Size du sey processes [process-id] print (1" Deallocated memory for process of process -id).") elx: print(1"process of process solz pot lound.) memory-manager - Best Fit Memory Manager ((100,200,50,190,300,80,120,200)) memory - manager-allocali - memory (1,70) memory - manager-allocale - memory (2,180) memory-manager-allocate-memory (3,250) memory - Manager display - memory - status memory-manager-deallocate-memory(0) print ("Inaples deallocating process 2:") memor - manager. display - memory - status

· Control of the many of the transfer of the second

Allocated 180 units of memory for black 1 in glock 6. Allocated pailed for process 2: Not Enough space Allocated 180 units of memory for process 3 in black 1. Memory Status: hi canthia gantata a a Block 0: 0/400 units allocated Block 1: laplace units allocated Block 2: 01 200 units allocated Block 3: 0/ 800 units allocated AT DESCRIPTION OF A BULLA Blocks: 0 laro units a llocated the sense of 1900 per as a sensole sub-Block 9: 0/200 units allocated Process 2 not found. deallocated memory for process 1. After deallocating memory process 4: TE STOTE - NOTE OF STREET Memory Status: TO manuary - numbers gon Block o: 0/150 units allocated Block 1: 1201300 units altocated. Stenation Land "Interior Block 2: 0/100 units allocated 71613 31 Blocks: 0/200 units allocated: Block 4: 0/250 units allocated. Block 9: 0/200 units ellocatedrise Tearning proming a willing (1) when it knows that the tries

4.4 18m: You are a system engineer wouting on a Jugacy maintain system that employs the MFT memory management technique the System is disigned to handle multiple process simulations by cividing memory and I med-size partitions.

code:

class manmemory Managu:

dy -init-Csey, num-partitions, partition-size):

self-num-partitions = num-partitions

SUJ. partition-size = partition-size

Scy-available. partitions = [True] * num-partitions Bey. polocesses = {}

dy allocate-memory (Self, polocer_9d, 512c):

-if size > sey partition_ size:

prent (t' Failed to allocate \$5729)
return.

for i en range (sey num-partitions):

it self-available-partitions[i]:

sey-available_partions [i] = false

sey. processes [poroces-id] = P.

porint (t" failed to allocate & size })

return

posint (1" tailed to allocate & sixe? units")

dy deallocate-memory (sey, process-id):

of parocers-id on sey parocenes:

partition-index = self. processes-[proces-id]

self. available - partitions (partition-index) = True

du sey. parocenes (parocens-id)

Partition a: Free

postal (1" Dealloasted receiving the process & process ad 3.") , alse". print(1" parecen & parecented y not found ") oly acceptant - marroway - statement only s paral ("In inemany stations") for the lange (ory num-portetions): order "" nineated" if not self avoilable partitions [] the "Free print (1" Parlitton fig: Estatus?") morning manager a METIN condig Manager Cours partitions = 3, partition-size = 300) memory - manager, allocate-recemony (1,600) memory-manager-allocali-memory (2,900) moreory-manager-allocate-memory (3,400) memory-manager-display-memory-slatuses monory-manager. deallocate-memory(2) memory-manager. deallocate-memory(1) memory-manager. display-parmory-statuse). -Allocated 600 units of memory for paocess 1 in partition o. railed to allocate 900 units of memory for process 2: Size ence Allocated 400 units of memory for polocess 3 in partition 1 themory States: Partition 4: Free Partition 0: Allocated Partition 5: Free Partition 1: - Allocated Partition 6: Arce

Linear a bot found

Rhollocated memory to process 1.

After deathcoating Powcess 1:

Memory Stateus

Partition or Tree

Parlition 4: Free

Partition 1: Allocated

partitions : Free

Partition D: Free

Partition 6: Free

Partition 3: Free Partition 7: Free

4.5 Aim: You are a software engineer tasked with implementing memory management, for a new operating system that utilizes the paging technique

Code:

with the same that have . class Paging Memory Manager:

dej -init- (self, num-page, page-size):

sey. num-pages = num-pages

scy-page-size = page-size

sey-available-pages=[True]* num-pages

Bly-procence = { }

dy allocatememory (sey, process 1d, stap):

required-pages = Cstre ascy page - stae -1)11 sel page - size allocated-pages=()

tor ? in range (self-num-pages):

it sey available - pages (17):

allocated-pages-append cry

sky-available-page (1) = False

```
a information of the company of the second the same in
                385431
        Fellow I something as a confect a trained and the
           off bussing Lucien 24 ) = enterested = backer
           Direct ( " informed & size & toples")
       1415
          panife" Allocation falled")
     dy deallocate-memory (self, powers ads;
         It become up an oil-becomes:
            allenged-pages + acy process [powers - rd]
            to page in deallocated pages:
               self. a ratiable - pages [page] = Thue
           du scy-processes [process-Td]
                                              As and 173 in the p
           porint(t" deallocated memory")
                                              Balandar of god
       clic:
           parint (+"Process & process - red 3. not Journal.")
                                             The state of the state of
   dy display-memory-status (scy):
                                             part en muchticet
        print ("In Memory Status").
        for it in range (self-num - pages);
                                         " Free " will ; & while
           stateu = " Allocated" il not
           print (t" page & i } : { Stateu}")
memory-manager = Paging Memory Manager (num-pages=20,
                                           page - size = 200)
memory-manager. allocate-memory (1,400)
memory-manager allocate -memory (2,600)
memory - manager-allocate - memory (3, 300)
```

weward worder of colonin we work spopers monory-manager deallast communities wereard-wounded-original-wereard- acoping)

Queput:

unoused to pater for baterens

Allocated and hyles to process of Roger (a.s. 1)

Allowated soo bytes for paracens is a nager (a. c.)

Memory Status:

page 101, Free page o: Allocated

pack 11 1 Fier page 1: - Mlocated

page > : Allocated page in Prec

page 12: Free page 3: nilocated

page 4: Attocated That page but Erect in him

page 5: Allocated

page 6: - Milocolect

page T: Free

page 8: free

page q: Free

page 151 Fire

De person page 197. Free