HW 7

7.1

a)

Request	16	8	6	21	14	10
9						×
11					×	
7		×				
16	×					

1. 16,8,6,21,14,1
2. 16,8,6,21,3,1
3. 16,1,6,21,3,1
4. 1,6,21,3,1

Free blocks: $\boxed{6,21}$

b)

Request	16	8	6	21	14	10
9				×		
11	×					
7					×	
16						

1. 16, 8, 6, 12, 14, 10
2. 5, 8, 6, 12, 14, 10
3. 5, 8, 6, 12, 7, 10
4. There is no free block with the size at least
   16 KiB (We must use a replacement strategy or wait)

c)

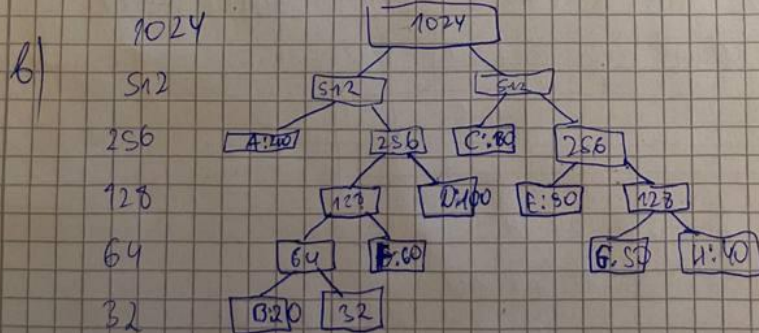| Request	16	8	6	21	14	10
9	×					
11			×			
7	×					
16						

1. 7, 8, 6, 21, 14, 10
2. 7, 8, 6, 10, 14, 10
3. 8, 6, 10, 14, 10
4. There is no free block with the size of at least
   16 KiB (We must wait or use a Replacement strategy)

2)

Request	18	8	6	21	14	10
8	X					
11				X		
7					X	
16						

1. 7, 8, 6, 21, 14, 10
2. 7, 8, 6, 10, 14, 10
3. 7, 0, 6, 10, 7, 10
4. There is not big enough hole to fit 16 KiB.
(We must use replacement strategy or wait for deallocation)

7.2
A →
a) B →
  C →
  D →
  E →
  F →
  G →
  H →

1024 KiB			
A	256		512
A	B 32 64 128		512
A	B 32 64 128	C	256
A	B 32 64 (22)	C	256
A	B 32 64 D	C	E	128
A	B 32 F D	C	E	128
A	B 3 F D	C	E	G 64
A	B 32 F D	C	E	G H

b)

1024	1024
512	512 , 512
256	A:40 , 256 , C:80 , 256
128	128 , D:100 , E:50 , 128
64	64 , F:60 , G:50 , H:40
32	B:20 , 32

- Overall internal fragmentation: 46 + 12 + 4 + 28 + 76 +
+ 38 + 14 + 24 = 242 KiB. Lowest chunk : 32

C) No, can not.
Because there are blocks:
B' `32` `64` are left and they can not

sum up into 86. Only if B's deallocated,
then 80kik request would be ~~allo~~ accomodated.

7.3

a)

reference string	3	1	2	4	1	3	2	4	1	3
frame 0	3	3	2	2	1	1	2	2	1	1
frame 1		1	1	4	4	3	3	4	4	3

Page faults: 8

reference string	3	1	2	4	1	3	2	4	1	3
frame 0	3	3	3	4	4	4	4	4	4	4
frame 1		1	1	1	1	3	3	3	3	3
frame 2			2	2	2	2	2	2	1	1

Page faults: 3

b)

reference string	3	1	2	4	1	3	2	4	1	3
frame 0	3	3	2	4	4	4	4	4	1	3
frame 1		1	1	1	1	3	2	2	2	2

Page faults: 6

reference string	3	1	2	4	1	3	2	4	1	3
frame 0	3	3	3	3	3	3	2	2	2	2
frame 1		1	1	1	1	1	1	1	1	3
frame 2			2	4	4	4	4	4	4	4

Page faults: 3

c)

reference string	3	1	2	4	1	3	2	4	1	3	Page faults:
frame 0	3	3	2	2	1	1	2		2	1	1
frame 1		1	1	4	4	3	3		4	4	3

8

X X X X X X X X

reference string	3	1	2	4	1	3	2	4	1	3	Page faults
frame 0	3	3	3	4	4	4	2	2	2	3	
frame 1		1	1	1	1	1	1	4	4	4	
frame 2			2	2	2	3	3	3	1	1	

6

X X X X X X