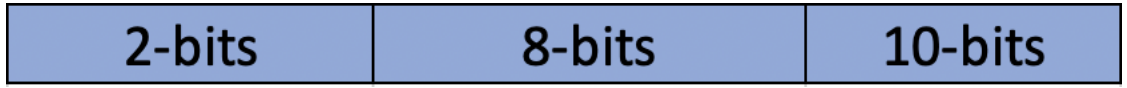
Lab Tasks

Session 1

- **Consider the following subdivision of 20 bit Virtual Address into 3 Segments as follows**



1. What is the Page Size in the above setting ? (2^10)…
2. If each page table entry takes 4 bytes, how much minimum memory is required by the program ? (2^2 + 2^8) * 4

Convert Following VA to PA assuming a 2 Level page table (1bit-3bit-12bit) with each page of 4kB.

1. 0xE21C (E21C)
2. 0x3A9D (5A9D)
3. 0xA9D9 (A9D9)
4. 0x7001 (F001)
5. 0xACA1 (ACA1)

Frame -1 indicates ”Disk”

Level 1 Page Table	
0	0xA925F233
1	0x6B73A49F

A @ 0xA925F233	
Page	Frame
0	9
1	1
2	3
3	5
4	-1
5	4
6	2
7	15

B @ 0x6B73A49F	
Page	Frame
8	-1
9	0
10	10
11	13
12	-1
13	-1
14	14
15	8

Session 2

- **Consider the following subdivision of 32 bit Virtual Address into 4 Segments as follows**

6-bits	8-bits	10-bits	8-bits

1. What is the Page Size in the above setting ?
2. If each page table entry takes 4 bytes, how much minimum memory is required by the program ?

Convert Following VA to PA assuming a 2 Level page table (1bit-3bit-12bit) with each page of 4kB.

1. 0xF74C
2. 0x8B9D
3. 0x19B9
4. 0x190F
5. 0x5CB1

Frame -1 indicates ”Disk”

Level 1 Page Table	
0	0xA925F233
1	0x6B73A49F

A @ 0xA925F233	
Page	Frame
0	9
1	1
2	3
3	5
4	-1
5	4
6	2
7	15

B @ 0x6B73A49F	
Page	Frame
8	-1
9	0
10	10
11	13
12	-1
13	-1
14	14
15	8

Session 3

- **Consider the following subdivision of 16 bit Virtual Address into 3 Segments as follows**

2-bits	10-bits	4-bits

1. What is the Page Size in the above setting ?
2. If each page table entry takes 4 bytes, how much minimum memory is required by the program ?

Convert Following VA to PA assuming a 2 Level page table (1bit-3bit-12bit) with each page of 4kB.

1. 0xB61C
2. 0x849D
3. 0x5AD9
4. 0xB901
5. 0x3BA1

Level 1 Page Table	
0	0xA925F233
1	0x6B73A49F

A @ 0xA925F233	
Page	Frame
0	9
1	1
2	3
3	5
4	-1
5	4
6	2
7	15

B @ 0x6B73A49F	
Page	Frame
8	-1
9	0
10	10
11	13
12	-1
13	-1
14	14
15	8

Frame -1 indicates ”Disk”

Session 4

- **Consider the following subdivision of 32 bit Virtual Address into 4 Segments as follows**

8-bits	8-bits	10-bits	6-bits

1. What is the Page Size in the above setting ?
2. If each page table entry takes 4 bytes, how much minimum memory is required by the program ?

Convert Following VA to PA assuming a 2 Level page table (1bit-3bit-12bit) with each page of 4kB.

1. 0xF12C
2. 0x49BD
3. 0xB1F9
4. 0x4D19
5. 0xBCA1

Frame -1 indicates ”Disk”

Level 1 Page Table	
0	0xA925F233
1	0x6B73A49F

A @ 0xA925F233	
Page	Frame
0	9
1	1
2	3
3	5
4	-1
5	4
6	2
7	15

B @ 0x6B73A49F	
Page	Frame
8	-1
9	0
10	10
11	13
12	-1
13	-1
14	14
15	8

Session 5

- **Consider the following subdivision of 32 bit Virtual Address into 2 Segments as follows**

10-bits	10-bits	12-bits

1. What is the Page Size in the above setting ?
2. If each page table entry takes 4 bytes, how much minimum memory is required by the program ?

Convert Following VA to PA assuming a 2 Level page table (1bit-3bit-12bit) with each page of 4kB.

1. 0xF21C
2. 0xBA9D
3. 0x19D9
4. 0x5001
5. 0xDCA1

Frame -1 indicates ”Disk”

Level 1 Page Table	
0	0xA925F233
1	0x6B73A49F

A @ 0xA925F233	
Page	Frame
0	9
1	1
2	3
3	5
4	-1
5	4
6	2
7	15

B @ 0x6B73A49F	
Page	Frame
8	-1
9	0
10	10
11	13
12	-1
13	-1
14	14
15	8

Session 6

- **Consider the following subdivision of 16 bit Virtual Address into 2 Segments as follows**

1. How many pages are in Virtual Address Space.
2. If each page table entry takes 4 bytes, how much minimum memory is required by the program ?

Convert Following VA to PA assuming a 2 Level page table (1bit-3bit-12bit) with each page of 4kB.

1. 0xA21C
2. 0x4A9D
3. 0xB9D9
4. 0x3001
5. 0x7CA1

Level 1 Page Table	
0	0xA925F233
1	0x6B73A49F

A @ 0xA925F233	
Page	Frame
0	9
1	1
2	3
3	5
4	-1
5	4
6	2
7	15

B @ 0x6B73A49F	
Page	Frame
8	-1
9	0
10	10
11	13
12	-1
13	-1
14	14
15	8