

## CS3402 Tutorial 6 Solutions:

1.

$$512/8 = 64 \text{ blocks}$$

$$\text{Sequential search} = 64/2 = 32$$

$$\text{Binary search} = \log_2 64 = \log_2 2^6 = 6$$

2.

(a) Static hashing with 5 buckets, each of which contains at most 3 records

Bucket 0

3760	
7115	
	NULL

Bucket 1

4871	
1821	
	NULL

Bucket 2

4692	
	NULL

Bucket 3

	NULL

Bucket 4

2369	
5659	
1074	
	NULL

## (b) Overflow handling

Bucket 0

3760	
7115	
1620	

Bucket 1

4871	
1821	
4981	

Bucket 2

4692	
	NULL

Bucket 3

2428	
	NULL

Bucket 4

2369	
5659	
1074	

Overflow buckets

3945		
4759		NULL
6975		NULL
9206		NULL

3. 8 hash codes (000, 001, 010, 100, 011, 110, 101, 111)

4.

a)  $R = 40 + 8 + 4 + 65 + 8 + 8 + 1 + 7 + 6 + 2 + 1 = 150$  bytes.

b) The blocking factor:  $brf = \text{floor}(1024/150) = 6$  records

c) The file will occupy  $\text{ceil}(1000 / brf) = \text{ceil}(1000/6) = 167$  blocks