

SOME POWERS OF 2

2^{10}	1,024
2^{11}	2,048
2^{12}	4,096
2^{13}	8,192
2^{14}	16,384
2^{15}	32,768

UNIX SYSTEM CALL PROTOTYPES FOR SOME COMMON SYSTEM CALLS:

```
int fork (void);

int pipe (int pipe_array[2]);

int execl (char* path, char* argv0, ... , NULL);

int execlp (char* name, char* argv0, ... , NULL);

int dup (int channel);

int open (char * path, int mode, int permissions);
Where mode must be one of : O_RDONLY, O_WRONLY, or O_RDWR (other flags could also be
OR'd in if needed), and permissions only matter if the open includes the O_CREAT flag
and is both creating and opening a new file.

int close (int channel);

int read (int channel, char * buffer, int byte_count);

int write (int channel, char * buffer, int byte_count);

int wait (int * status);

int exit (int exit_number);

int sigaction(int signum, struct sigaction * new, struct sigaction * old);
```

PTHREAD ROUTINES:

```
int pthread_mutex_init(pthread_mutex_t *mutex,
                      const pthread_mutexattr_t * attr);
int pthread_mutex_lock(pthread_mutex_t *mutex);

int pthread_mutex_unlock(pthread_mutex_t *mutex);

int pthread_cond_init(pthread_cond_t * cond,
                      const pthread_condattr_t * attr);

int pthread_cond_wait(pthread_cond_t * cond,
                      pthread_mutex_t * mutex);

int pthread_cond_signal(pthread_cond_t *cond);
int pthread_cond_broadcast(pthread_cond_t *cond);

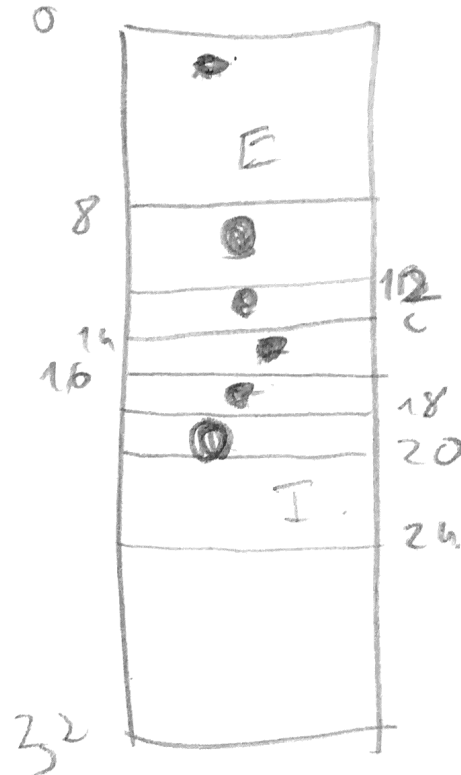
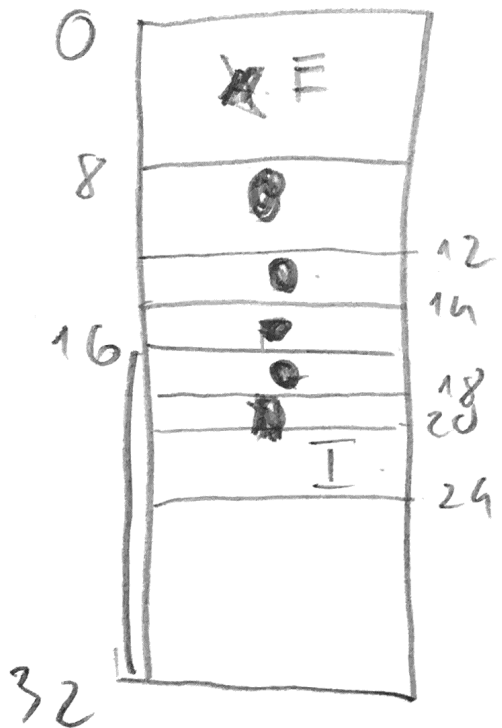
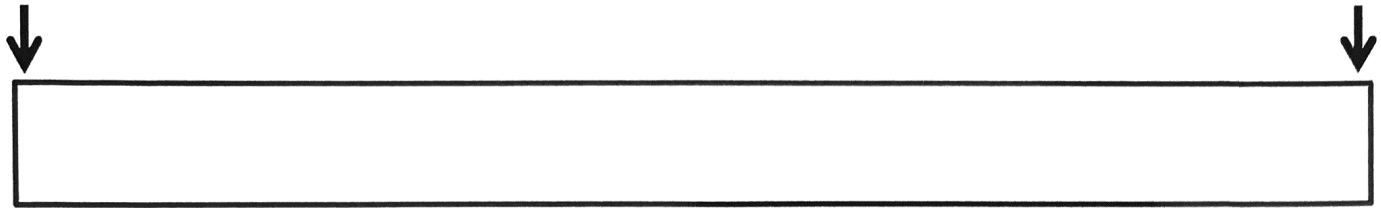
int pthread_create(pthread_t * thread_id,
                  const pthread_attr_t * attr,
                  void *(*start_routine) (void*), void * arg);

int pthread_join(pthread_t thread_id, void **value_ptr);
```

HELP SHEET FOR PROBLEM #1:

Address 0

Address 32K-1



But the there
is a difference
process
(HW context switch)
a TLB shot down.
invalidated
in previous entry

2K	
4K	
8K	
16K	
32K	0

Scratch Memory Grid

(w)	2	3	1	3	2	4	3	2	4	5	1	6	7	5	6	7	4	5	2	6	7	2	1
1	2	3	1	3	2	4	3	2	4	5	1	6	7	5	6	7	4	5	6	7	2	1	
2		2	3	1	3	3	4	4	2	4	5	5	5	7	7	6	6	6	5	6	7	2	
3			2	2	1	2	2	3	3	2	4	4	6	6	5	5	5	4	4	5	6	2	
4						1	1	1	1	1	2	2	4	4	4	4	7	7	7	4	5	6	
5										3	3	1	2	2	2	2	2	2	2	2	4	5	
6												3	1	1	1	1	1	1	1	1	1	4	
7													3	3	3	3	3	3	3	3	3	3	
c1																							
c2																							
c3				1	1	1	2	2	3	3	3	3	3	4	4	5	5	5	6	6	6	6	
c4					1	1	1	2	2	2	2	2	2	3	3	3	4	4	4	4	4	4	
c5											1	1	1	1	1	1	2	2	2	3	3	3	
c6																					1	1	
c7																						1	
∞																							