

#define

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Synchronization

10/03/03	Friday	P3 out
10/06/03	Monday	No class HW1 out <i>MEET PARTNER ON P3</i>
10/10/03	Friday	Checkpoint 1 due
10/13/03	Monday	HW1 due
10/15/03	Wednesday	Mid-term exam
10/17/03	Friday	Mid-semester break
10/20/03	Monday	Mid-term grades due

Outline

- What's wrong with this picture?

Example 1

```
int scanbuf[64];

int getchar(void)
{
    ...
    if (++bufindex == 64)
        bufindex = 0;
    ...
}
```

Example 1 – Change Requirement

From: Dave Eckhardt

Subject: keyboard buffer size

Keyboard buffers must handle somebody placing a cat on the keyboard (the 101-key keyboard).

Option 1

```
int scanbuf[256];

int getchar(void)
{
    ...
    if (++bufindex == 64)
        bufindex = 0;
    ...
}
```

Option 2

```
int scanbuf[64];

int getchar(void)
{
    ...
    if (++bufindex == 256)
        bufindex = 0;
    ...
}
```

Option 3 – *Try This At Home!!!*

```
#define KSB_SIZE 256
int scanbuf[KSB_SIZE];

int getchar(void)
{
    ...
    if (++bufindex == KSB_SIZE)
        bufindex = 0;
    ...
}
```


Example 2

```
int scanbuf[64];

int getchar(void)
{
    ...
    if (bufindex == 63)
        bufindex = 0;
    ...
}
```

Example 2 – Truly Pernicious

- How to fix *half* of the problem

```
% grep 64 *.c
```

- Wrong *two* ways
 - Won't find 63
 - Will find other 64's

Example 3

```
#define CENTER_X 49
```

```
#define CENTER_Y 12
```

```
...
```

```
set_cursor_pos (CENTER_Y,  
                CENTER_X);
```

```
...
```

Example 3 – Change Requirement

From: Dave Eckhardt

Subject: new screen size

We have updated the VGA hardware initialization sequence. The new screen size will be:

```
#define CONSOLE_WIDTH 120
```

```
#define CONSOLE_HEIGHT 30
```

Example 4

...

```
p->regsave[-18] |= 0x402;
```

...

- Don't make me stop the car.....