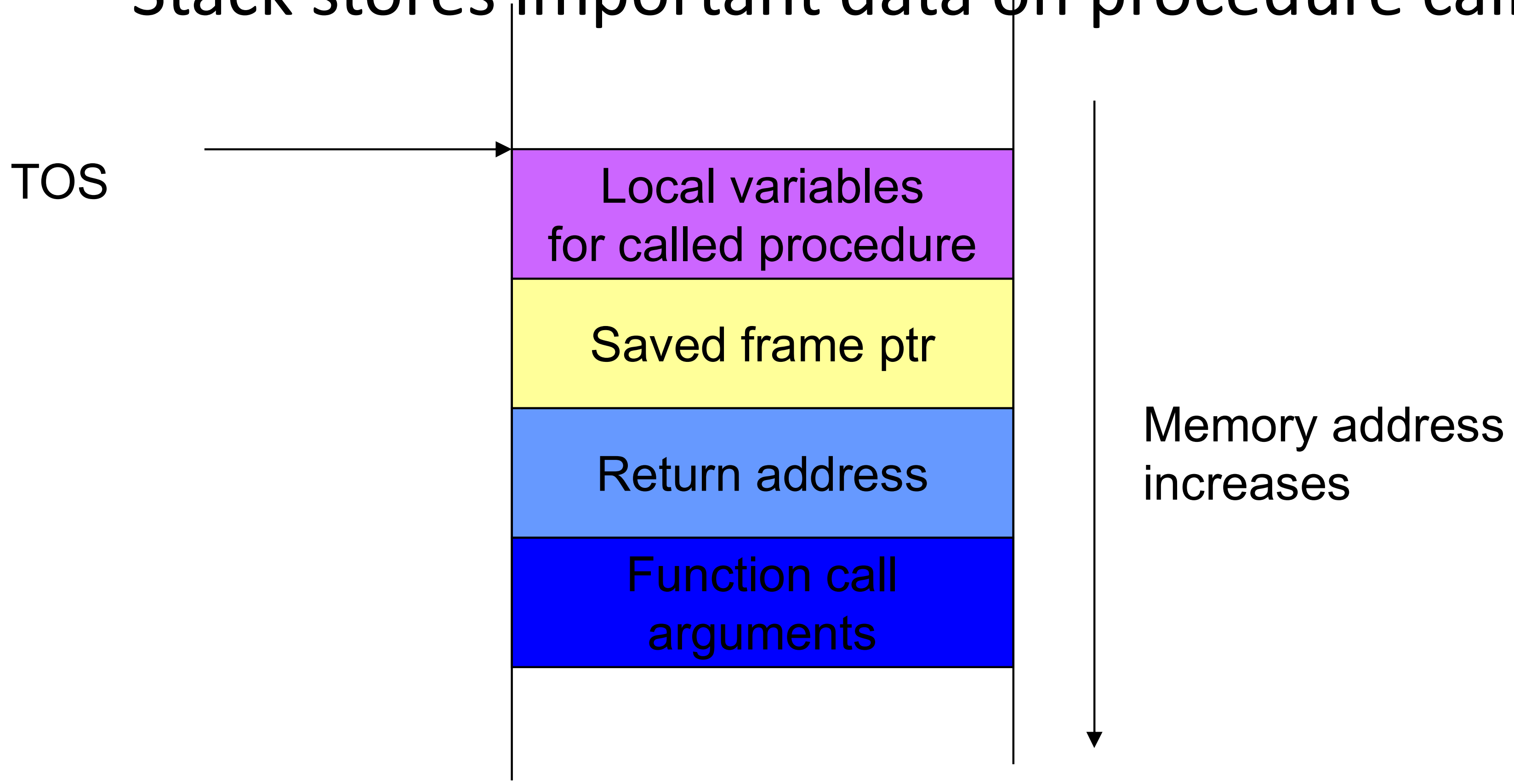
Buffer Overflow Attacks

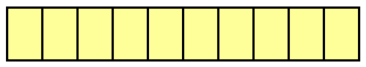
- Stack-based overflow attacks
- Stack stores important data on procedure call



Buffer Overflow Attacks

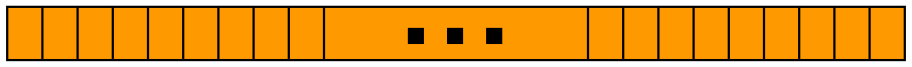
- Consider a function

```
void sample_function(char* s)
{
  char buffer[10];
  strcpy(buffer, s);
  return;
}
```



- And a main program

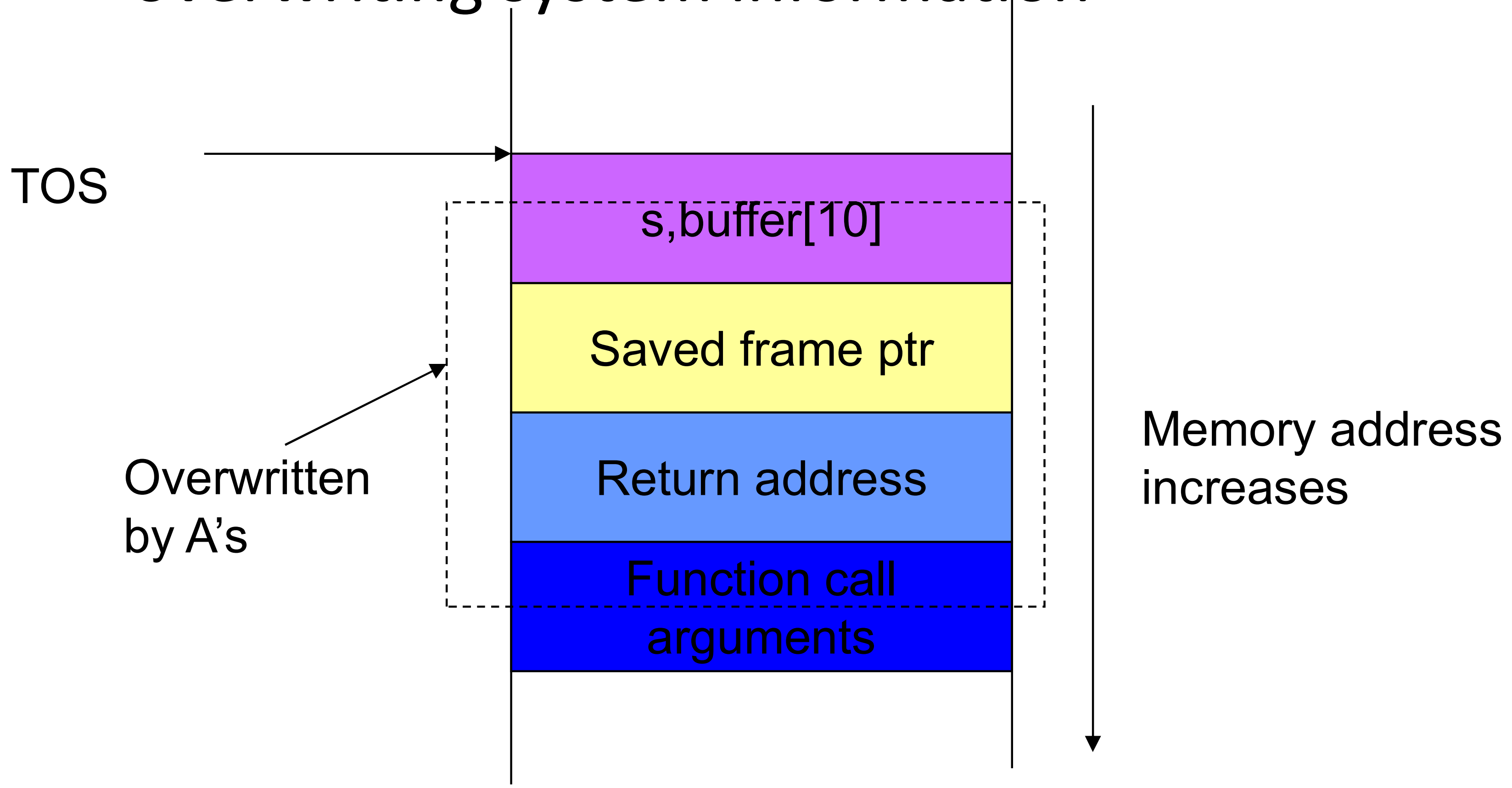
```
void main()
{
  int i;
  char temp[200];
  for(i=0; i<200;i++) temp[i]='A';
  sample_function(temp);
  return;
}
```



Argument is larger than we expected

Buffer Overflow Attacks

- Large input will be stored on the stack, overwriting system information



Buffer Overflow Attacks

- Attacker overwrites return address to point somewhere else
  - "Local variables" portion of the stack
  - Places attack code in machine language at that portion
  - Since it is difficult to know exact address of the portion, pads attack code with NOPs before and after