The following problem concerns the following, low-quality code:

```
void foo(int x)
{
  int a[3];
  char buf[4];
  a[0] = 0xF0F1F2F3;
  a[1] = x;
  gets(buf);
  printf("a[0] = 0x%x, a[1] = 0x%x, buf = %s\n", a[0], a[1], buf);
}
```

In a program containing this code, procedure `foo` has the following disassembled form on an IA32 machine:

```
080485d0 <foo>:
80485d0: 55              pushl  %ebp
80485d1: 89 e5           movl   %esp,%ebp
80485d3: 83 ec 10        subl   $0x10,%esp
80485d6: 53              pushl  %ebx
80485d7: 8b 45 08        movl   0x8(%ebp),%eax
80485da: c7 45 f4 f3 f2  movl   $0xf0f1f2f3,0xfffffff4(%ebp)
80485df: f1 f0
80485e1: 89 45 f8        movl   %eax,0xfffffff8(%ebp)
80485e4: 8d 5d f0        leal   0xfffffff0(%ebp),%ebx
80485e7: 53              pushl  %ebx
80485e8: e8 b7 fe ff ff  call   80484a4 <_init+0x54>  # gets
80485ed: 53              pushl  %ebx
80485ee: 8b 45 f8        movl   0xfffffff8(%ebp),%eax
80485f1: 50              pushl  %eax
80485f2: 8b 45 f4        movl   0xfffffff4(%ebp),%eax
80485f5: 50              pushl  %eax
80485f6: 68 ec 90 04 08  pushl  $0x80490ec
80485fb: e8 94 fe ff ff  call   8048494 <_init+0x44>  # printf
8048600: 8b 5d ec        movl   0xffffffec(%ebp),%ebx
8048603: 89 ec           movl   %ebp,%esp
8048605: 5d              popl   %ebp
8048606: c3              ret
8048607: 90              nop
```

For the following questions, recall that:

- `gets` is a standard C library routine.
- IA32 machines are little-endian.
- C strings are null-terminated (i.e., terminated by a character with value 0x00).
- Characters '`0`' through '`9`' have ASCII codes `0x30` through `0x39`.

## Problem 36. (8 points):

Consider the case where procedure `foo` is called with argument `x` equal to `0xE3E2E1E0`, and we type "`123456789`" in response to `gets`.

A. Fill in the following table indicating which program values are/are not corrupted by the response from `gets`, i.e., their values were altered by some action within the call to `gets`.

| Program Value | Corrupted? (Y/N) |
|---|---|
| `a[0]` | |
| `a[1]` | |
| `a[2]` | |
| `x` | |
| Saved value of register `%ebp` | |
| Saved value of register `%ebx` | |

B. What will the `printf` function print for the following:

- `a[0]` (hexadecimal): _____
- `a[1]` (hexadecimal): _____
- `buf` (ASCII): _____