```
#include <err.h>
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>

#define MALLOC_SIZE 1024 * 1024

void
printMalloc(void *p, int s) {
        (void)printf("malloc/realloc %d\n", s);
        (void)printf("begins at 0x%12lX\n", (unsigned long)p);
        (void)printf("ends   at 0x%12lX\n", (unsigned long)p+s);
        (void)printf("\n");
}

int
main() {
        void *ptr;

        if ((ptr = malloc(BUFSIZ)) == NULL) {
                err(EXIT_FAILURE, "malloc");
                /* NOTREACHED */
        }
        printMalloc(ptr, BUFSIZ);

        /* shrink */
        if ((ptr = realloc(ptr, BUFSIZ / 2)) == NULL) {
                err(EXIT_FAILURE, "realloc");
                /* NOTREACHED */
        }
        printMalloc(ptr, BUFSIZ / 2);

        /* grow */
        if ((ptr = realloc(ptr, MALLOC_SIZE)) == NULL) {
                err(EXIT_FAILURE, "realloc");
                /* NOTREACHED */
        }
        printMalloc(ptr, MALLOC_SIZE);

        /* shrink, but larger than initial allocation */
        if ((ptr = realloc(ptr, BUFSIZ * 2)) == NULL) {
                err(EXIT_FAILURE, "realloc");
                /* NOTREACHED */
        }
        printMalloc(ptr, BUFSIZ * 4);

        return EXIT_SUCCESS;
}
```