CRYPTOGRAPHY Project 1
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We will create a series of programs that take a file as input and produce a file as output. Add these programs to a source folder named `crypt`.

Program 1. Create a new program `clone.c`. Edit, compile, and debug this program with the following code.

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

int clone(FILE *ori,FILE *trg)
{
    int chr;
    while (1)
    {
        chr = fgetc(ori);
        if (chr == EOF) break;
        fputc(chr, trg);
    }
}

void help(void)
{
    printf("Syntax: clone <ori file> <targ file>\n");
}

int main(int argc, char* argv[])
{
    FILE *ori, *trg;

    if (argc < 3)
    {
        help();
        return 0;
    }
    ori = fopen(argv[1],"rb");
    if (!ori)
    {
        printf("Unable to open ori file %s\n",argv[1]);
        return 1;
    }
    trg = fopen(argv[2],"wb");
    if (!trg)
    {
        printf("Unable to open trg file %s\n",argv[2]);
        fclose(ori);
        return 2;
    }

    clone(ori,trg);
    fclose(trg);
    fclose(ori);
    return 0;
}
```

Program 2. Copy `clone.c` into program `strip.c`. Rename the function `clone` to `strip`. Modify this function to

(a) Convert all letters to uppercase.

(b) Remove all characters which are not letters.

(c) Insert newline (`\n`) after every 72 characters.

Program 3. Copy `strip.c` to program `shift.c`. Rename the function `strip` to `shift`, and add an argument `int key`. Modify this function to implement the base 26 letter shift cipher. The key should be passed on the command line of main as `argv[3]`. The output should satisfy Program **??** specifications. Test your output by decrypting the encrypted file.

Program 4. Copy `strip.c` to program `affine.c`. Rename function `strip` to `affine`, and add arguments `int a, int b`. Modify this function to implement the base 26 letter affine cipher. The keys should be passed on the command line of main as `argv[3]` and `argv[4]`. The output should satisfy Program **??** specifications. Test your output by decrypting the encrypted file.

Program 5. Copy `strip.c` into program `pstrip.c`. Rename the function `strip` to `strip`. Modify this function to

(a) Leave all printable characters (ASCII 32 through 126) as they are.

(b) Remove all other characters.

(c) Insert newline (`\n`) after every 72 characters.

Program 6. Copy `shift.c` to program `pshift.c`, and modify it to implement the base 95 printable character shift cipher. The output should satisfy Program 5 specifications. Test your output by decrypting the encrypted file.

Program 7. Copy `affine.c` to program `paffine.c`, and modify it to implement the base 95 printable character shift cipher. The output should satisfy Program 5 specifications. Test your output by decrypting the encrypted file.