Project 1 Documentation

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Compiling

This project is writtin in ANSI standard C (C99).

This project is built with a makefile, which was configured for building on Linux with gcc. The project does not have any dependencies (besides the c standard library and math library), so it should work on other platforms.

To compile, the four .c files in src/ (bitstream.c, crc.c, hamming.c, and main.c) should be compiled with src/ as an include directory. This is automatically done with a makefile on Linux systems, and can just be done by running "make" in the root of the project.

The commands that the makefile runs (on linux) are:

Code for part 2:

```
mkdir -p ./bin
mkdir -p ./obj
gcc -c -o ./obj/bitstream.o src/bitstream.c -Isrc -Wall
gcc -c -o ./obj/crc.o src/crc.c -Isrc -Wall
gcc -c -o ./obj/hamming.o src/hamming.c -Isrc -Wall
gcc -c -o ./obj/main.o src/main.c -Isrc -Wall
gcc -o ./bin/pj1 ./obj/main.o ./obj/bitstream.o \
    ./obj/crc.o ./obj/hamming.o -lm
```

Running

This project can be run directly from the makefile, with `make run ARGS="<args>"` where are the arguments to the program specified below.

The project can also be run directly as a binary after being compiled. For example, if the project was compiled to ./bin/pj1, it could be run as `./bin/pj1 <args>`

The arguments to the program are listed when the program is run with no arguments. The essential arguments are:

- `--part={part}`: specifies which part to run, so for example for part 1.1, the argument would be `--part=1.1`

- `--input={input}`: The input to the program

- `--generator={generator}`: The generator to use (only for part 2)

- `--quiet`: Tells the program to not output any text besides the final output

- `--test`: Tells the program to run tests

Testing

Part 1.1:

```
0 2:20 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.1 --input=1001000 --quiet
00110010000
0 2:20 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.1 --input=1101001100110101 --quiet
01111011001100110101
0 2:20 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.1 --input=1010101 --quiet
11110100101
0 2:21 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.1 --input=11111111 --quiet
111011101111
0 2:21 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1
```

Part 1.2:

```
0 2:22 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.2 --input=00110010000 --quiet
1001000
0 2:22 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.2 --input=00110010001 --quiet
1001000
0 2:22 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.2 --input=01111011001100110101 --quiet
1101001100110101
0 2:22 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.2 --input=11110100101 --quiet
1010101
0 2:23 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.2 --input=111011101111 --quiet
11111111
0 2:23 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=1.2 --input=11110000101 --quiet
1010101
0 2:23 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1
```

Part 2:

```
0 2:24 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=2 --input=10011101 --generator=1001 --quiet
10011101100
0 2:24 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=2 --input=1101011011 --generator=10011 --quiet
11010110111110
0 2:25 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=2 --input=10011101 --generator=1001 --quiet
10011101100
0 2:25 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1  ./bin/pj1 --part=2 --input=1101011011011100 --generator=1101110111011101 --quiet
1101011011011100110101101101110
0 2:26 sean@Sean-Laptop  master ~/Documents/UCCS/2020/Spring/CS4220/pj1
```