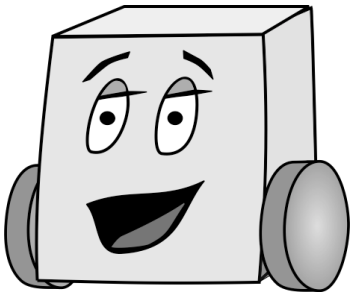

E11: Autonomous Vehicles

Fall 2014

PS 3: Gold Codes

Gold Code Generation

For this assignment, write a single Mudduino file named `ps3_lastname_firstname.ino`. **Important:** place the following comment on the first line of your code (where xx is the number of hours that it took you):

```
// Time to complete program = xx hours
```

Your program has one purpose: To create and print the following eight Gold Codes using the methods discussed in class:

- Gold Code 1: GC($1 + x^2 + x^3 + x^4 + x^5$, $1 + x^3 + x^5$, 00001)
- Gold Code 2: GC($1 + x^2 + x^3 + x^4 + x^5$, $1 + x^3 + x^5$, 00010)
- Gold Code 3: GC($1 + x^2 + x^3 + x^4 + x^5$, $1 + x^3 + x^5$, 00011)
- Gold Code 4: GC($1 + x^2 + x^3 + x^4 + x^5$, $1 + x^3 + x^5$, 00100)
- Gold Code 5: GC($1 + x^2 + x^3 + x^4 + x^5$, $1 + x^3 + x^5$, 00101)
- Gold Code 6: GC($1 + x^2 + x^3 + x^4 + x^5$, $1 + x^3 + x^5$, 00110)
- Gold Code 7: GC($1 + x^2 + x^3 + x^4 + x^5$, $1 + x^3 + x^5$, 00111)
- Gold Code 8: GC($1 + x^2 + x^3 + x^4 + x^5$, $1 + x^3 + x^5$, 01000)

Print your eight resulting Gold Codes in this format:

Gold Code <number>: <31-bit sequence>

If you program is correct, the first two lines of output should e

```
Gold Code 1: 00000001000110110000011001110011
Gold Code 2: 11000111111100010000111100010100
```

Hints

Try generating Gold Code 2 by hand to be sure you understand the process. Then break your hand operation into steps, and write a function for each of the steps. Predict what each function should do on each step for that code, and use print statements to compare what it actually does with your expectations.

Deliverables

You are responsible for turning in your Arduino file to the “Resources/Problem Set 3” folder in the E11 page on Sakai:

:

- `ps3_Lastname_Firstname.ino`

The file is due before class.

Grading

Your code will be graded as follows

- 1.0 point for a program that compiles
- 1.0 additional point for a program that works according to the requirements described above.
- 1.0 additional point for your program being adequeately commented
- This results in 3.0 points maximum

Note that you will need to have this code working for the next problem set and the final project!