PIC 10A 2B

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Today…

- HW4 Q&A
- Review for Midterm
- Recursive Functions
  - Permutation
- More Questions?
  - HW4, HW5, or Midterm

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HW 4 Q&A

- Problem 1: Review the exercise from Week 3: “Prime factorization”
  - In fact this covers the first problem of the HW.
  - Please make it clear in the submission that you referred to my code (if you did)

- Problem 2: Review the exercise from Week 4: “Random_Walk_Simulator”
  - It is a simplified, 1-D version of HW4 P2
  - Now, instead of having 50% chance to go up/down, you need 25% chance to go up/down/left/right
  - In addition to the boundary check, you also need to check if it’s back at the origin
  - The rest is more or less the same!

- Let me know if you want me to go over those previous exercises again

Review for Midterm (1)

- Variables
  - Naming rule
- Numeric Types
  - int, short, long, float, double, etc.
  - You don’t need to memorize the exact upper/lower limits for each type
- Arithmetic Operations
  - +, -, *, / and integer division
  - increment/decrement (++/--)
  - Remainder (mod) operator %
- Math Functions
  - <cmath> library
  - cos, sin, pow(base, exponent), sqrt, etc.
- Round-off Errors

Review for Midterm (2)

- Strings
  - Sequence of “char”s → accessible through [ ] (subscript operator)
  - + works for string + char, string + string (as a concatenation)
  - Difference between cin >> … and getline(cin, …)
  - Member functions (e.g. length(), substr(), etc.)
- Output Formatting
  - <iomanip> (**i**nput/**o**utput **manip**ulation)
  - setprecision(), setw(), etc.
- Control Flow
  - if/else, for, while, do while
  - break and continue
  - Nested Loops

Review for Midterm (2)

- Comparison Operators
  - <, <=, >, >=, ==, !=
  - For strings, the comparison is *lexicographic*, and uses the ASCII code of characters
  - Numbers(0-9) < Capital letters(A-Z) < Lowercase letters(a-z)
- Random Numbers
  - <cstdlib> → rand() and srand()
  - <ctime> → time(nullptr) for setting the seed
  - Formulas
    - r_double = (rand()*1./RAND_MAX)*(B-A) + A;
    - r_int = A + rand()%(B-A+1);
- Functions
  - Pass by Value (Copy) vs Pass by Reference
  - Procedures

Recursive Functions – Permutations

- Recursive functions can be very useful in certain situations
  - It can reduce the length of your code significantly

- Permutations of “abc” are “abc”, “acb”, “bac”, “bca”, “cab”, “cba”

- Write a function that prints all permutations of an input string (parameter)
  - This might be a very challenging exercise!
  - The solution is given on github.com/bumsu-kim/PIC10A

Questions?

- Regarding HW4, HW5, Recursive Functions, or Midterm?

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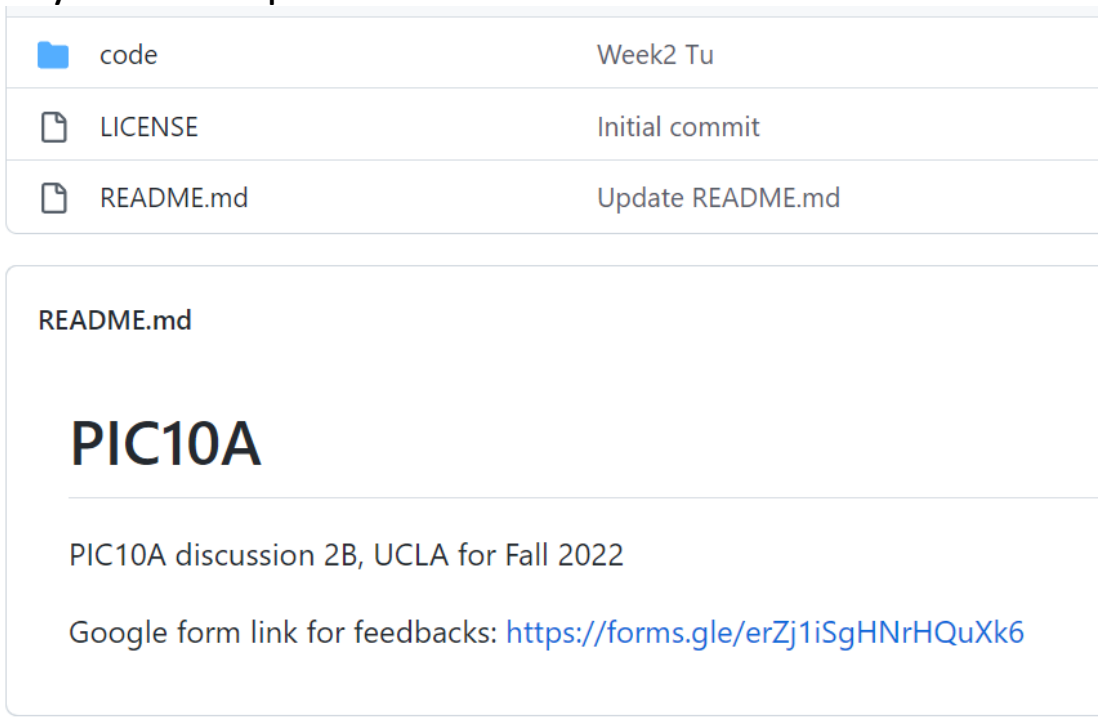
Your Feedback is welcome

- Don’t hesitate to give a feedback on the discussion
- Use the link on my Github repo, or the link below:
  - https://forms.gle/erZj1iSgHNrHQuXk6

My Github repo on the web looks like:



Click this link

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