EF234101 Fundamental Programming (F)

Quiz 1

Starting date:	18 September 2024
Deadline:	25 September 2024, 23:59 WIB. **Penalty: 0.15% of grade/minute of tardiness.**
Exam type:	Open, Individual Project
Send to:	MM Irfan Subakti <yifana@gmail.com> CC to Sarah Nurhasna Khairunnisa <sarahnurhasna@gmail.com>, Widian Sasi Disertasiani <widianogik@gmail.com>, Arya Gading Prinandika <gprinandika@gmail.com> & Adnan Abdullah Juan <adnanjuan06@gmail.com> with the subject: **EF234101_FunPro(F)_Q1_StudentID_Name**
File type and format:	A **zip** file containing all of the **.c source files** & the **declaration**
Filename format:	**EF234101_FunPro(F)_Q1_StudentID_Name.ZIP**

Instruction
Please do these steps as in the following.

1. Create a program in C, namely `01_basic_geometry_[your_name].c`, as in the following. [**20 points**]

   Input:
   ```
   float base;
   float base1;
   float base2;
   float height;
   float side_length;
   float radius;
   ```
   Ask the user about the above inputs by using the `scanf()` function.

   Output:
   - "`Area of a Rectangle: `" = base × height
   - "`Area of a Square: `" = side_length^2
   - "`Area of Triangle: `" = ½(base × height)
   - "`Area of Parallelogram: `" = base × height
   - "`Area of Trapezoid: `" = ½($base_1$ + $base_2$) × height
   - "`Area of Circle: `" = π(radius)^2

   Print out the results by using the `printf()` function.

2. Create a program in C, namely `02_guess_[your_name].c`, as in the following. [**20 points**]

   Input:

   ```
   int answer;
   int guess;
   ```

   Ask the user to input the answer to the guessing game by using the `scanf()` function. Then, input the `guess`. Do this until `guess = answer;`

   Output:

   - If the `guess` is lower than the `answer` (e.g., `guess` = 5, `answer` = 10) print "`Your guess is too low!`"
   - Else (otherwise), if the `guess` is higher than the `answer` (e.g., `guess` = 20, `answer` = 10) print "`Your guess is too high!`"
   - If the `guess` is still wrong, tell the user to input another `guess` until the `guess` is correct.
   - If the `guess` is correct, then print "`Congratulations! Your guess is correct!`" and `exit` the program.

   Print out the results by using the `printf()` function.

3. Create a program and name it `03_hundreds_power_[your_name].c` for **printing a 100^n** with **n** is an integer input! [**20 points**]

   Hint: integer has 32 bits so it has the range of [-2147483648 .. 2147483647]

4. Create a program in C, imitating the classic game "rock paper scissors", namely `04_rps_[your_name].c`, as in the following. [**20 points**]

   In this game, the players will input numbers instead of words. 1 denotes rock, 2 denotes paper, and 3 denotes scissors. In the end, the computer will decide the results of the game.

   The process:

   - The first player will be asked a number (1-3).
   - The second player will be asked a number (1-3).
   - If either player enters an invalid input (anything other than 1, 2, or 3), they will be asked to enter a valid input until they do.
   - The computer will then announce the result.

   As long as the process is the same, everything is a fair game.

5. Create a program to solve the following problem and name it `05_goblin_slayer_[your_name].c`. [**20 points**]

   The world is in ruins. Monsters are roaming around the world, in a certain part of the remote forest stood a little boy with a stick in his hand. He could feel his feet shaking, looking at the despair in front of his eyes. Three monsters with greenish bodies and the appearance of a human child surrounded him.

   The world is surely unfair to give such a little boy to his deathbed, but every cloud has its silver lining. One of the goblins possesses an item that the boy has searched for for a month, the item to cure his mother's illness, a full moon grass tapped in its belt.

   Gripping tight the cypress stick in his hand the boy makes his determination. He is no longer the boy who would cry every time he failed. He surveys his stats and his enemies' stats.

   The boy's hp is 200
   goblins hp is 165
   goblin 1 attack is 3
   goblin 2 attack Is 4
   goblin 3 attack is 1

   The boy's attack is 10 and every 3rd turn the boy can unleash his skill that deals 20 damage.

   Every turn each side attacks another side; the boy will attack goblin 1 first till it dies, and then attack goblin 2, and lastly attack goblin 3; as long as the goblins are alive it will attack the boy for each turn (the dead goblin won't attack as it's already dead)

   Print the course of the battle of the boy, the battle ends when either party is wiped out (all goblins died or the boy's HP reached 0)! [**20 points**]

   Input: - (*there's no input required*)

   Example **Output** :
   turn 1
   boy attacked goblin1 for 10 damage; goblin1 hp: 155
   goblin 1 attacked boy for 3 damage; boy hp: 197
   goblin 2 attacked boy for 4 damage; boy hp: 193
   goblin 3 attacked boy for 1 damage; boy hp: 192
   turn 2
   boy attacked goblin1 for 10 damage; goblin1 hp: 145
   goblin 1 attacked boy for 3 damage; boy hp: 189
   goblin 2 attacked boy for 4 damage; boy hp: 185
   goblin 3 attacked boy for 1 damage; boy hp: 184

   At the end of the battle, print the total turns that have happened and the remaining cumulative HP of the winning party.

6. To avoid plagiarism/cheating, every student needs to pledge and declare, then she/he must submit her/his **signed pledge and declaration** as in the following. Failing to do so will result in getting a 0 (zero) grade. Attach the **scanned**/**photo** of your *declaration* in your report.

   "By the name of Allah (God) Almighty, herewith I pledge and truly declare that I have solved quiz 1 by myself, didn't do any cheating by any means, didn't do any plagiarism, and didn't accept anybody's help by any means. I am going to accept all of the consequences by any means if it has proven that I have done any cheating and/or plagiarism."

   [Place, e.g., Surabaya], [date, e.g., 25 September 2024]

   <Signed>

   [Full name, e.g., Arianti Purbasari]
   [StudentID, e.g., 05112440000xxxx]

7. ZIP the files of `01_basic_geometry_[your_name].c`, `02_guess_[your_name].c`, `03_hundreds_power_[your_name].c`, `04_rps_[your_name].c`, `05_goblin_slayer_[your_name].c` and your declaration (e.g., `Declaration.PDF`) into 1 (one) only .ZIP file, namely `EF234101_FunPro(F)_Q1_StudentID_Name.ZIP`. Send this **.ZIP** file to `yifana@gmail.com` and CC to the TAs.

8. Have a lovely day! Good luck! 😊