IF184101 Basic Programming (E)

Quiz 1

Starting date:	13 September 2019
Deadline:	20 September, 23:59 WIB. **Penalty: 0.15% of grade/minute of tardiness.**
Exam type:	Open
Send to:	
	MM Irfan Subakti <yifana@gmail.com> CC to Agung Dwi Wicaksono <agung.dwi.temp@gmail.com> with the subject: IF184101_BASPRO_E_Q1_NRP_Name
File type and format:	A zip file containing all of the .c source files & the declaration
Filename format:	IF184101_BASPRO_E_Q1_NRP_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 above inputs by using `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 `printf()` function.

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

   Input:
   ```
   float height;
   float weight;
   int gender;
   ```
   Ask the user about her/his weight and height by using `scanf()` function.

   Input:
   - Float variable of **height** & **weight.**
   - Integer variable of **gender**; 0 for female, 1 for male.

Based on the ideal body weight and height formula (Devine, 1974), the ideal proportions are as follows:

Male : 50.0 kg + 2.3 kg per inch over 5 feet
Female : 45.5 kg + 2.3 kg per inch over 5 feet
P.S.: one feet approximately equal to 30cm; 1inch approximately equals to 2.5cm

Output:

"Ideal" if the ideal proportion divided by their actual weight equals to 1.
"Overweight" if the ideal proportion divided by their actual weight is less than 1, but more than or equal to 0.5.
"Obese" if the ideal proportion divided by their actual weight is less than 0.5.
"Underweight" if the ideal proportion divided by their actual weight is more than 1, but less than or equal to 2.
"Anorexic" if the ideal proportion divided by their actual weight is more than 2.

Print out the results by using `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 that it has the range of [-2147483648 .. 2147483647]

4. Create a program in C, namely `04_grade_[your_name].c`, as in the following. [**20 points**]

   Input:
   `float grade;`
   Ask the user about her/his grade by using `scanf()` function.

   Output:
   "`A`" if the grade is 86.0 – 100
   "`AB`" if the grade is 76.0 – 85.99
   "`B`" if the grade is 66.0 – 75.99
   "`BC`" if the grade is 61.0 – 65.99
   "`C`" if the grade is 56.0 – 60.99
   "`D`" if the grade is 41.0 – 55.99
   "`E`" if the grade is 0.0 – 40.99
   Print out the results by using `printf()` function.

   Then, please also do the task as in the following.
   Output:
   "`It's 4.0 of 4.0 Scale Grade`" if the grade is A
   "`It's 3.5 of 4.0 Scale Grade`" if the grade is AB
   "`It's 3.0 of 4.0 Scale Grade`" if the grade is B
   "`It's 2.5 of 4.0 Scale Grade`" if the grade is BC
   "`It's 2.0 of 4.0 Scale Grade`" if the grade is C
   "`It's 1.0 of 4.0 Scale Grade`" if the grade is D
   "`It's 0.0 of 4.0 Scale Grade`" if the grade is E
   Print out the results by using `printf()` function.

5. Create a program to solve the following problem and name it `05_goblinslayer_[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 on his hand. He could feel his feet shaking, looking at the despair in front of his eyes. Three monsters with the greenish body and the appearance that of a human child surrounded him.

   The world is surely unfair to give such a little boy to his death bed, but every cloud has its silver lining. One of the goblins possesses an item that the boy has searched 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 that 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 attack is 10 and every 3rd turn the boy can unleash his skill that deals 20 damage

   Every turn each side attack another side; the boy will attack goblin 1 first till it died, and then attack goblin 2 and lastly attack goblin 3; as long as the goblins 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 if either party wiped out (all goblins died or boy's HP reach 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 been 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. Failed to do so will be resulted in getting 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 been done any cheating and/or plagiarism."

[Place, e.g., Surabaya], [date, e.g., 20 September 2019]

<Signed>

[Full name, e.g., Bedildala Putro Bledeg]
[NRP, e.g., 05111340000xxx]

7. ZIP the files of `01_basic_geometry_[your_name].c`, `02_BMI_[your_name].c`, `03_hundreds_power_[your_name].c`, `04_grade_[your_name].c`, `05_goblinslayer_[your_name].c` and your declaration (e.g., `Declaration.PDF`) into 1 (one) only .ZIP file, namely `IF184101_BASPRO_E_Q1_NRP_Name.ZIP`. Send this .ZIP file (`IF184101_BASPRO_E_Q1_NRP_Name.ZIP`) to `yifana@gmail.com` and CC-ed to `agung.dwi.temp@gmail.com`.

8. Have a great day! Good luck! 😊

Reference

1. Devine, B.J. (1974) Gentamicin Therapy. *Drug Intelligent and Clinical Pharmacy*, 8 (11), pp. 650–655.