Final Project

Course: SDEV140

Instructor: Nick Laplante

Student: Myron Snelson

# Project Introduction

* Name of the GUI application: PEMDAS+
* Purpose: The purpose of this application will be to challenge new computer science students to resolve expressions using correct operator precedence
* Reason: I would like to make the learning of operator precedence fun yet challenging for new computer science students
* Goals:
  + Create an educational application
  + Make the application fun
  + Make the application challenging
  + Make the application game-like in its approach with lives and scores
  + Allow the user to exit the application after each challenge
  + Provide the user encouraging feedback
    - At the end of each round
    - At the conclusion of the program execution
* Outline
  + Display lives and score
  + Set expression length
  + Generate an expression
    - Randomly generate integers for the expression
    - Randomly generate operators for the expression
    - Solve generated expression
  + Display a locked lock image
  + Ask the user to solve and then enter the value of the generated expression
  + If they enter a correct answer on their first attempt
    - Display an unlocked lock image
    - Award them points: 50/rounded resolution minutes (minimum 1)
    - Update score
    - Increase the length of the expression
  + If they If they enter a correct answer on their second attempt
    - Display an unlocked lock image
    - Award them points: 25/rounded resolution minutes (minimum 1)
    - Update score
    - Increase the length of the expression
  + If they enter a correct answer on their third attempt
    - Display an unlocked lock image
    - Award them points: 10/rounded resolution minutes
    - Update score
    - Increase the length of the expression
  + If they fail to enter a correct answer on their third attempt
    - Reduce their number of lives by 1
    - Show them the correct answer
    - Update lives
    - Reduce the length of the expression
  + If remaining lives is zero
    - Rate and display their skill level based on score
    - End program
  + Ask the user if they wish to keep playing
    - If “yes”, start another round
    - If any other reply, rate and display their skill level based on remaining lives and score
    - Each remaining life will be worth 100 points
    - End program