

BEGIN Program

DISPLAY "Welcome to Greg's Maths Test!"

DISPLAY "Select a difficulty:"

DISPLAY "1) Easy"

DISPLAY "2) Medium"

DISPLAY "3) Hard"

REPEAT

INPUT difficulty\_choice

IF difficulty\_choice = "1" THEN

num\_questions  $\leftarrow$  5

max\_num  $\leftarrow$  10

DISPLAY "Easy mode selected!"

EXIT LOOP

ELSE IF difficulty\_choice = "2" THEN

num\_questions  $\leftarrow$  10

max\_num  $\leftarrow$  20

DISPLAY "Medium mode selected!"

EXIT LOOP

ELSE IF difficulty\_choice = "3" THEN

num\_questions  $\leftarrow$  15

max\_num  $\leftarrow$  50

DISPLAY "Hard mode selected!"

EXIT LOOP

ELSE

    DISPLAY "Invalid choice! Enter 1, 2 or 3."

END IF

UNTIL valid choice

score  $\leftarrow$  0

correctness\_list  $\leftarrow$  empty list

time\_list  $\leftarrow$  empty list

FOR q\_number FROM 1 TO num\_questions DO

    DISPLAY "Score: ", score

    DISPLAY "Question ", q\_number, " of ", num\_questions

    IF q\_number = num\_questions THEN

        DISPLAY "Challenge question!"

        num1  $\leftarrow$  RANDOM(max\_num, max\_num \* 2)

        num2  $\leftarrow$  RANDOM(max\_num, max\_num \* 2)

    ELSE

        num1  $\leftarrow$  RANDOM(max\_num // 2, max\_num)

        num2  $\leftarrow$  RANDOM(max\_num // 2, max\_num)

    END IF

operator  $\leftarrow$  RANDOM CHOICE from ["+", "-"]

IF operator = "-" AND num2 > num1 THEN

    SWAP num1 and num2   // ensures positive answer

END IF

question  $\leftarrow$  CONCAT(num1, operator, num2)

START timer

PROMPT "What is ", question, "?"

user\_answer  $\leftarrow$  INPUT as INTEGER

STOP timer

time\_taken  $\leftarrow$  END\_TIME - START\_TIME

correct\_answer  $\leftarrow$  EVALUATE(question)

IF user\_answer = correct\_answer THEN

    correctness\_list.APPEND(True)

    points\_awarded  $\leftarrow$  MAX(10 - time\_taken, 1)

    score  $\leftarrow$  score + points\_awarded

    DISPLAY "Correct! Answered in ", time\_taken,  
        " second(s) - ", points\_awarded, " point(s)."

ELSE

    correctness\_list.APPEND(False)

    DISPLAY "Incorrect! Answered in ", time\_taken,  
        " second(s) - no points awarded."

END IF

time\_list.APPEND(time\_taken)

END FOR

total\_correct  $\leftarrow$  COUNT of True in correctness\_list

percentage\_correct  $\leftarrow$  ROUND((total\_correct / num\_questions) \* 100)

avg\_time  $\leftarrow$  ROUND(SUM(time\_list) / LENGTH(time\_list))

DISPLAY "Results:"

DISPLAY "Final score: ", score

DISPLAY "Correct answers: ", percentage\_correct, "%"

DISPLAY "Average response time: ", avg\_time, "s"

DISPLAY "Breakdown:"

DISPLAY "Question   Correct   Time"

FOR i FROM 1 TO num\_questions DO

    IF correctness\_list[i] = True THEN

        correct\_str  $\leftarrow$  "Yes"

    ELSE

        correct\_str  $\leftarrow$  "No"

    END IF

    DISPLAY i, correct\_str, time\_list[i], "s"

END FOR

END Program