

BEGIN PROGRAM

FUNCTION create\_question(difficulty):

IF difficulty = "easy" THEN

number\_range  $\leftarrow$  1 to 10

ELSE IF difficulty = "medium" THEN

number\_range  $\leftarrow$  1 to 25

ELSE

number\_range  $\leftarrow$  1 to 50

END IF

num1  $\leftarrow$  RANDOM number in number\_range

num2  $\leftarrow$  RANDOM number in number\_range

operator  $\leftarrow$  RANDOM choice from {"+", "-", "\*"}

// Ensure subtraction never gives negative answers

IF operator = "-" AND num2 > num1 THEN

SWAP num1 and num2

END IF

expression  $\leftarrow$  STRING "num1 operator num2"

correct\_answer  $\leftarrow$  EVALUATE(expression)

RETURN expression, correct\_answer

END FUNCTION

FUNCTION ask\_question(expression, correct\_answer):

DISPLAY "What is expression?"

start\_time  $\leftarrow$  CURRENT TIME

TRY

    user\_input ← INTEGER(INPUT)

CATCH error:

    DISPLAY "Invalid input"

    RETURN 0, NONE, CURRENT TIME - start\_time

END TRY

end\_time ← CURRENT TIME

elapsed\_time ← end\_time - start\_time

IF user\_input = correct\_answer THEN

    IF elapsed\_time ≤ 5 THEN

        score ← 2

    ELSE

        score ← 1

    END IF

    DISPLAY "Correct! Points awarded"

ELSE

    score ← 0

    DISPLAY "Incorrect, correct answer was correct\_answer"

END IF

RETURN score, user\_input, elapsed\_time

END FUNCTION

FUNCTION maths\_quiz():

    DISPLAY "Welcome to Maths Quiz"

    DISPLAY "Choose difficulty: 1 Easy, 2 Medium, 3 Hard"

REPEAT

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choice ← INPUT
IF choice = "1" THEN
    difficulty ← "easy"
    total_questions ← 5
    valid ← TRUE
ELSE IF choice = "2" THEN
    difficulty ← "medium"
    total_questions ← 8
    valid ← TRUE
ELSE IF choice = "3" THEN
    difficulty ← "hard"
    total_questions ← 12
    valid ← TRUE
ELSE
    DISPLAY "Invalid selection"
    valid ← FALSE
END IF
UNTIL valid = TRUE

DISPLAY "You selected difficulty mode"

total_score ← 0
results ← EMPTY LIST

FOR question_number FROM 1 TO total_questions DO
    expression, correct_answer ← create_question(difficulty)
    DISPLAY "Question question_number of total_questions"
    score, user_input, elapsed_time ← ask_question(expression, correct_answer)
    total_score ← total_score + score
    APPEND (expression, correct_answer, user_input, score, elapsed_time) TO results
END FOR

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// Final results summary
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DISPLAY "Quiz Completed"
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DISPLAY "Final Score: total_score / (total_questions * 2)"
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```
percentage ← (total_score / (total_questions * 2)) * 100
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```
DISPLAY "Percentage: percentage %"
```

```
// Question breakdown
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```
DISPLAY "No. Question  Your Ans  Correct Ans  Score  Time"
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```
FOR EACH result IN results DO
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    DISPLAY result
```

```
END FOR
```

```
END FUNCTION
```

```
CALL maths_quiz()
```

```
END PROGRAM
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