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PRACTICE EXERCISE # 5

1. LE5.13.c Pseudocode

START

1. INITIALIZE choice, result, root1, root2, discriminant, exponent, factorial, a, b, c, n
2. WHILE True
   - **2.1** DISPLAY “Problem Solver Menu”
   - **2.2** DISPLAY “1. Power Problem Solver”
   - **2.3** DISPLAY “2. Factorial Problem Solver”
   - **2.4** DISPLAY “3. Quadratic Equation Solver”
   - **2.5** DISPLAY “4. Quit”
   - **2.6** PROMPT and READ “Enter your choice: “, %d, &choice
   - **2.7** IF choice is not a valid integer or invalid input THEN
     - **2.7.a** DISPLAY “Invalid input, Please enter a number.”
     - **2.7.b** CONTINUE
   - **2.8** ENDIF
   - **2.9** IF choice is = 1 THEN
     - **2.9.a** PROMPT and READ “Enter base: “ %lf, &base
     - **2.9.b** PROMPT and READ “Enter exponent: “ %d, &exponent
     - **2.9.c** CALCULATE result = power of base raised to the exponent
     - **2.9.d** DISPLAY “%.2lf raised to the power of %d is %.2lf.”, base, exponent, result
   - **2.10** ENDIF
   - **2.10a** ELSE IF choice is = 2 THEN
     - **2.10.*1*** PROMPT and READ “Enter a positive integer: “, %d, &n
     - **2.10.2** FOR i = 1; i <= n; increment i
       - **2.10.3a** CALCULATE factorial *= i
     - **2.10.3** ENDFOR
     - **2.10.4** DISPLAY “Factorial of %d = %llu.”, n, factorial
   - **2.11** ENDIF
   - **2.11a** ELSE IF choice is = 3 THEN
     - **2.11.1** PROMPT and READ “Enter coefficient a: “, %lf, &a
     - **2.11.2** PROMPT and READ “Enter coefficient b: “, %lf, &b
     - **2.11.3** PROMPT and READ “Enter coefficient c: “, %lf, &c
     - **2.11.4** CALCULATE discriminant = b * b – 4 * a * c
     - **2.11.5** IF a = 0 and b = 0 THEN
       - **2.11.5a** DISPLAY “There is no solution.”
     - **2.11.6** ENDIF
     - **2.11.6a** ELSE IF a = 0 THEN
       - **2.11.6.1** CALCULATE root1 = -c / b
       - **2.11.6.2** DISPLAY “There is one root: %.2lf.”, root1
     - **2.11.7** ENDIF

2.11.7a ELSE IF discriminant is less than 0 THEN
2.11.7a.1 DISPLAY “There are no real roots.”
2.11.8 ENDIF
2.11.8a ELSE IF discriminant is = 0 THEN
2.11.8a.1 CALCULATE root1 = -b / (2 * a)
2.11.8a.2 DISPLAY “There is one root: %.2lf.”, root1
2.11.9 ENDIF
2.11.9a ELSE
2.11.9a.1 CALCULATE root1 = (-b + sqrt(discriminant)) / (2 * a)
2.11.9a.2 CALCULATE root2 = (-b – sqrt(discriminant)) / (2 * a)
2.11.9a.3 DISPLAY “There are two roots: %.2lf and %.2lf.”, root1, root2
2.11.9b ENDIF
2.12 ENDIF
2.12a ELSE IF choice is 4 THEN
2.12a.1 DISPLAY “Exiting the program.”
2.12a.2 BREAK
2.13 ENDIF
2.13a ELSE
2.13a.1 DISPLAY “Invalid choice. Please try again.”
2.13 ENDIF
3. ENDWHILE

END / STOP

LE5.13.c Flowchart
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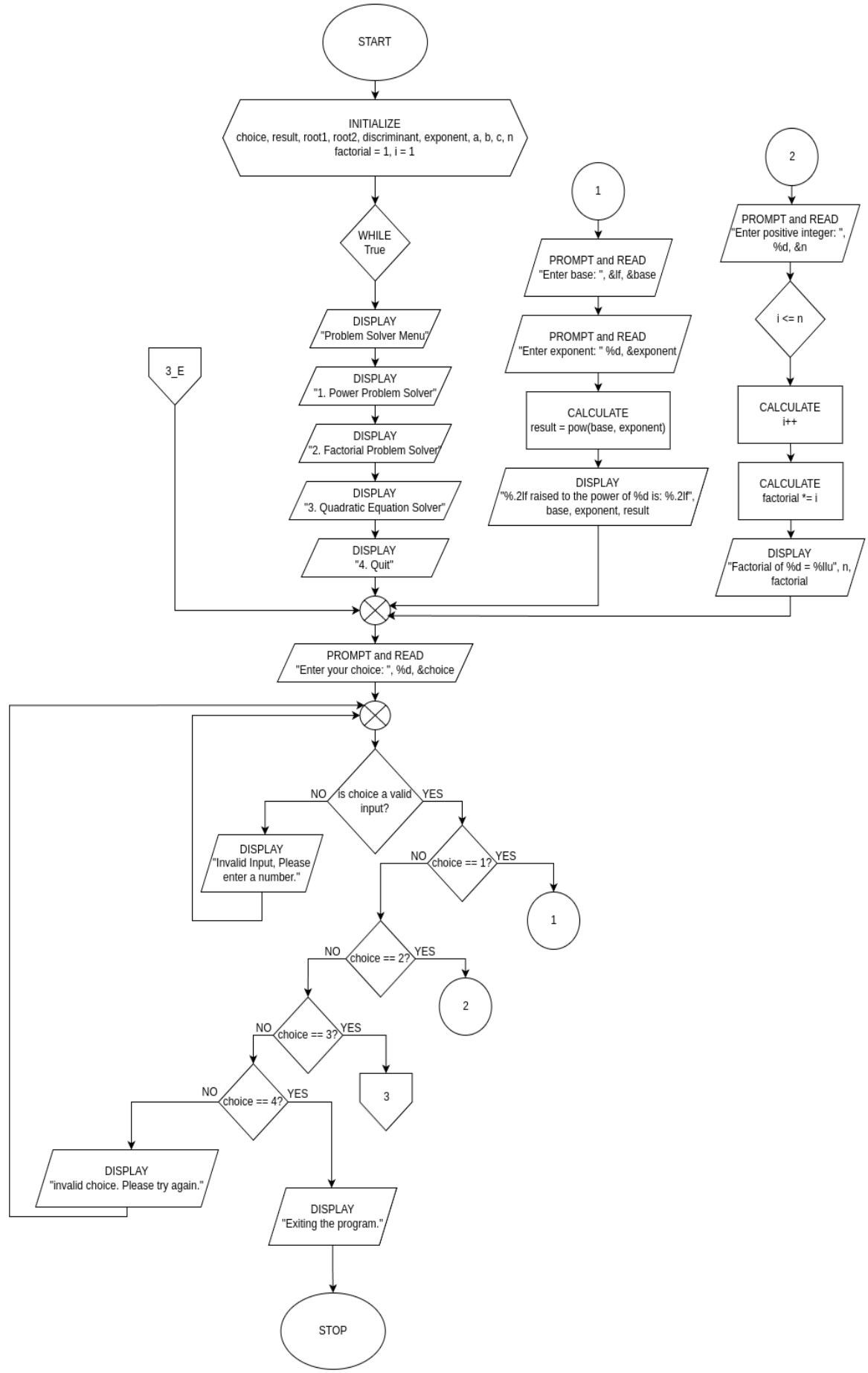

LE5.13.c Flowchart
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