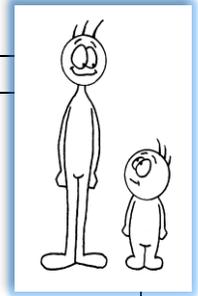


Last name _____ First name _____ Student No. _____

A&CP-E1-V1. Program Design. Do not declare variables for any problem.

P#1. Tallest Guy: In the solutions *below* you must decide if the answer is right or wrong. Write ✓ if the pseudocode is correct, nothing otherwise. Algorithms find the height of the tallest boy in a two-guy beach volleyball team. Their height is stored in variables A and B. If they are of same height the program should report either one as the tallest. Assume **no** syntax errors.



<p>(1)</p> <pre> INPUT A, B IF A >= B PRINT " A is tallest " ELSE PRINT " B is tallest " ENDIF </pre>	<p>(2)</p> <pre> INPUT A, B Tallest=A IF B >= Tallest Tallest=B ENDIF PRINT "Tallest is", Tallest </pre>
<p>(3)</p> <pre> INPUT A, B IF A > B PRINT " A is tallest" ELSEIF B > A PRINT " B is tallest" ELSEIF A == B PRINT "A is of the same height as B" ENDIF </pre>	<p>(4)</p> <pre> INPUT A, B IF A > B PRINT " A is tallest" ELSEIF B > A PRINT " B is tallest" ELSEIF B == A PRINT "Error" ENDIF </pre>
<p>(5)</p> <pre> SET A, B IF A > B PRINT " A is tallest" ELSE PRINT "B is tallest" ELSE PRINT "A is of the same height as B" ENDIF </pre>	<p>(6)</p> <pre> INPUT A, B Tallest=A IF A <= B % notice the symbol <= Tallest=B ENDIF PRINT "Tallest is ", A </pre>
<p>(7)</p> <pre> PRINT "What is the tallest between A and B?" INPUT A or B SET Tallest A or B PRINT " Tallest is", Tallest </pre>	<p>(8)</p> <pre> PRINT 'What is the tallest between A and B?' INPUT A, B SET Tallest =A WHILE A >= B PRINT " Tallest is ", Tallest ENDWHILE </pre>

P#2. Write pseudocode to determine if a positive number X entered by the user is prime. Prime numbers are only divisible by 1 and itself. For instance, 5 is prime because it is only divisible exactly by 1 and 5. On the other hand, 8 is not prime because it is divisible by 1, 2, 4, 8. Hint: You can use the mod or % operator to compute the remainder of an integer division.

P#3. Write pseudocode to determine the factors of a positive number N entered by the user and their sum. For instance, if $N=10$ its factors are: 1, 2, 4, 5, 10. Hint: You can use the mod or % operator to compute the remainder of an integer division.

P#4. Write pseudocode to determine the prime factors of a positive number N entered by the user. Prime numbers are only divisible by 1 and itself. For example, if $N=10$ its prime factors are: 2, 5. Hint: You can use the mod or % operator to compute the remainder of an integer division.

FCAR-Assessment. The problem below will be used for Assessment – Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the outcome being measured. Appropriate sampling methods may be used as part of an assessment process.

Course Learning Objective:

The student would be able to:

1. Construct an algorithm for the solution of a programming problem by means of program design tools, e.g., top-down design, flowcharts, pseudocode-

P#5. Long multiplication for integers. Alternative procedure. Write a flowchart for an alternative algorithm to multiply integers $A \times B$. This alternative algorithm adds repeatedly A , precisely B times. Your algorithm must work for any integer. For example, multiply 123×6 :

Standard Algorithm	Alternative Algorithm: Add 123 to itself 6 times.
$123 \times 6 = 738$ $A \times B = C$	$123 + 123 + 123 + 123 + 123 + 123 = 738$ $\underbrace{A + A + A + A + A + A}_{A \text{ is summed exactly } B \text{ times}} = C$