COMP100 Programming Fundamentals Week 1

For each of the problems below, identify the output(s), identify the inputs and decide if the problem is solvable. If it can be solved, generate an algorithm and create a three-column IPO chart with the required algorithm. The column will contain the Input Processing and Output information respectively.

1. Create a program that calculates and displays the average of three numbers. The user will enter the three numbers.

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| --- | --- | --- |
| Input | Processing | Output |
| * Number 1 * Number 2 * Number 3 | * Enter number 1 * Enter number 2 * Enter number 3 * Calculate average by adding numbers and dividing by 3 | * Average number |

Sample Calculation:

* Given an input numbers of 1, 2, 3
* (1 + 2 + 3) / 3 = 2

1. Builders’s Inc. needs a program that allows its salesclerks to enter the diameter of a circle and the prices of railing material per foot. The program should display the circumference of the circle and total cost of the railing material. (Use 3.14 as the value of pi). [You should use double instead of int32 for the number]

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| --- | --- | --- |
| Input | Processing | Output |
| * Diameter in feet * Price of railing per foot | * Calculate circumference by multiplying pi and diameter * Calculate total cost by multiplying circumference by price of railing | * Circumference * Total cost |

Sample Calculation:

* Given a diameter of 5ft and a price of $2.50/ft
* 5ft \* 3.14 = 15.7ft circumference
* 15.7ft \* $2.50/ft = $39.25 total cost

1. Willow Pools wants a program that allows its salespeople to enter the dimensions of a rectangular pool in meters. The program should display the volume of the rectangular pool.

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| --- | --- | --- |
| Input | Processing | Output |
| * Length in meters * Width in meters * Depth in meters | * Calculate the volume by multiplying length, width and depth | * Volume of the pool |

Sample Calculation:

* Given a length of 1m, width of 2m, and depth of 3m
* 1m \* 2m \* 3m = 6m3

1. Perry Brown needs a program that allows him to enter the length of fours sides of a polygon. The program should display the perimeter of the polygon.

|  |  |  |
| --- | --- | --- |
| Input | Processing | Output |
| * Side 1 * Side 2 * Side 3 * Side 4 | * Calculate the perimeter by adding all sides | * Perimeter of the polygon |

Sample Calculation:

* Given sides of 1, 2, 3, 4
* 1 + 2 + 3 + 4 = 10