Pseudo Code Practice Problems:

Listed below is a brief explanation of Pseudo code as well as a list of examples and solutions.

# Pseudo code

Pseudo code can be broken down into five components.

* **Variables:**
* **Assignment:**
* **Input/output:**
* **Selection:**
* **Repetition:**

A variable has a name, a data type, and a value. There is a location in memory associated with each variable. A variable can be called anything or be given any name. It is considered good practice to use variable names that are relevant to the task at hand.

Assignment is the physical act of placing a value into a variable. Assignment can be shown using

**set = 5;**

**set = num + set;**

The left side is the variable a value is being stored in and the right side is where the variable is being accessed. When a variable is assigned a value, the old value is written over with the new value so the old value is gone. x = 5 does not mean that x is equal to 5; it means set the variable x to have the value 5. Give x the value 5, make x equal to 5.

Input / Output both deal with an outside source (can be a user or another program) receiving or giving information. An example would be assuming a fast food restaurant is a program. A driver (user) would submit their order for a burger and fries (input), they would then drive to the side window and pick up their ordered meal (output.)

* **Output – Write / display / print**
* **Input – Read / get / input**

Selection construct allows for a choice between performing an action and skipping it. It is our conditional statements. Selection statements are written as such:

**if ( conditional statement)**

**statement list**

**else**

**statement list**

**statement list**

**statement list**

Repetition is a construct that allows instructions to be executed multiple times (IE repeated).

In a repetition problem

* + Count is initialized
  + Tested
  + incremented

Repetition problems are shown as:

**while ( condition statement)**

**statement list**

# Solutions

Example 1: Write pseudo code that reads two numbers and multiplies them together and print out their product.

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| Pseudo Code: Get number1  Get number 2  Product = number1 x number2  Display product | C# code:  int n1 = 0;  int n2 = 0;  int product = 0;  n1 = Convert.ToInt16(txtInput1.Text);  n2 = Convert.ToInt16(txtInput2.Text);  product = n1\*n2;  MessageBox.Show(product + “”); |

Example 2: Write pseudo code that tells a user that the number they entered is not a 5 or a 6.

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| Pseudo Code:  Get number1  If number1 = 5 or number1 = 6 then  Else  Display “Number is not 5 or 6” | int n = 0;  n = Convert.ToInt16(txtInput.Text);  if (n != 5||n != 6)  {  MessageBox.Show(“Number is not 5 or 6”)  } |

Exercise 3: Write pseudo code that performs the following: Ask a user to enter a number. If the number is between 0 and 10, write the word blue. If the number is between 10 and 20, write the word red. if the number is between 20 and 30, write the word green. If it is any other number, write that it is not a correct color option.

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| Pseudo Code:  Get number  If number is between 0 and 10 write “blue”  If number is between 10 and 20 write “red”  If number is between 20 and 30 write “green”  Else write “Invalid colour” | C# code:  int n = 0;  n = Convert.ToInt16(txtInput.Text);  if (n <30)  {  MessageBox.Show(“Invalid Colour”);  }  else if (n>20)  {  MessageBox.Show(“Green”);  }  else if (n>10)  {  MessageBox.Show(“Red”);  }  else if (n>0)  {  MessageBox.Show(“Blue”);  } |

Exercise 4: Write pseudo code to print all multiples of 5 between 1 and 100 (including both 1 and 100).

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| Pseudo Code: | C# code: |

Exercise 5: Write pseudo code that will count all the even numbers up to a user defined stopping point.

For example, say we want to see the first 5 even numbers starting from 0.

Well, we know that evens numbers are 0, 2, 4, etc.

The first 5 even numbers are 0, 2, 4, 6, 8.

The first 8 even numbers are 0, 2, 4, 6, 8 ,10 ,12, 16

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| Pseudo Code:  Get user to input number  Check if number is even  If number is not even ask for the user to enter a different number  If number is even  Begin at 0 and add 2 until the sum reaches the number inputted by the user. | C# code:  int n = 0;  int x = 0;  int remainder = 0;  n = Convert.ToInt16(txtInput.Text);  remainder = n % 2;  if (remainder == 0)  {  while (x != n)  {  x = x+2;  txtOutput.Text += (x+”, ”);  }  }  else  {  MessageBox.Show(“Enter an even number!”)  } |

Exercise 6: Write pseudo code that will perform the following.

a) Read in 5 separate numbers.

b) Calculate the average of the five numbers.

c) Find the smallest (minimum) and largest (maximum) of the five entered numbers.

d) Write out the results found from steps b and c with a message describing what they are.

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| Pseudo Code: | C# code: |

Exercise 7: Write pseudo code that reads in three numbers and writes them all in sorted order.

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| Pseudo Code: | C# code:  int n1 = 0;  int n2 = 0;  int n3 = 0;  n1 = Convert.ToInt16(txtInput.Text);  n2 = Convert.ToInt16(txtInput.Text);  n3 = Convert.ToInt16(txtInput.Text);  if (n1>n2)  {  If (n1>n3)  {  If (n2 > n3)  {  MessageBox.Show(n1+n2+n3+””);  }  Else  {  MessageBox.Show(n1+n3+n2+””);  }  }  Else  {  If (n2 > n3)  {  MessageBox.Show(n1+n2+n3+””);  }  Else  {  MessageBox.Show(n3+n1+n2+””);  }  }  Else  {  If (n1>n3)  {  If (n2 > n3)  {  MessageBox.Show(n2+n1+n3+””);  }  Else  {  MessageBox.Show(n2+n3+n1+””);  }  }  Else  {  If (n2 > n3)  {  MessageBox.Show(n1+n2+n3+””);  }  Else  {  MessageBox.Show(n3+n1+n2+””);  }  }  } |

Exercise 8: Write pseudo code that will calculate a running sum. A user will enter numbers that will be added to the sum and when a negative number is encountered, stop adding numbers and write out the final result.

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| Pseudo Code:  Set sum to 0  Get number  Check if number is negative  If no add number to sum, repeat  If yes stop repeating and display sum | C# code:  Int sum = 0;  Int n = 0;  While (n>=0)  {  N = Convert.ToInt16(txtInput.Text);  Sum = sum +n;  }  MessageBox.Show(sum+””); |