**Homework 1 – Basic Pointers**

**Note: You may find the syntax to accomplish these exercises from lecture demo.**

**Exercise 1:** Follow these steps:

1. Declare:
   1. Int variables num1, num2 and sum
   2. Int\* pointer variables xPtr, yPtr and sumPtr
2. Set num1, num2 and sum to 5, 7 and 0 respectively
3. Initialize all pointers to 0 (nullptr)
4. Print values of variables num1, num2 with labels as shown in the required output below:

**Required Output:**

|  |
| --- |
| Num1 = 5  Num2 = 7 |

1. Print the addresses of Num1 and Num2 using Address Operator (&). Required Output (assuming addresses starting from 0x10 for Num1 and so on) is shown below. (Note that addresses will be different on different machines)

**Required Output:**

|  |
| --- |
| Num1 = 5  Num2 = 7  Address of Num1 = 0x10 //(This will be different on your machine)  Address of Num 2 = 0x14//(This will be different on your machine) |

1. Point xPtr to num1 and yPtr to num2
2. Print values of Num1 and Num2 by dereferencing xPtr and yPtr

**Required Output:**

|  |
| --- |
| Num1 = 5  Num2 = 7  Address of Num1 = 0x10 //(This will be different on your machine)  Address of Num 2 = 0x14//(This will be different on your machine)  \*xPtr = 5  \*yPtr = 7 |

1. Point sumPtr to sum and print sum by dereferencing sumPtr.

**Required Output:**

|  |
| --- |
| Num1 = 5  Num2 = 7  Address of Num1 = 0x10 //(This will be different on your machine)  Address of Num 2 = 0x14//(This will be different on your machine)  \*xPtr = 5  \*yPtr = 7  \*sumPtr = 0 |

1. Add num1 and num2 using \*xPtr and \*yPtr and save the result in integer sum
2. Again Print sum using sumPtr

**Required Output:**

|  |
| --- |
| Num1 = 5  Num2 = 7  Address of Num1 = 0x10 //(This will be different on your machine)  Address of Num 2 = 0x14//(This will be different on your machine)  \*xPtr = 5  \*yPtr = 7  \*sumPtr = 12 |

1. Print the values of xPtr and yPtr (cout<<”xPtr = ”<<xPtr<<endl)

**Required Output:**

|  |
| --- |
| Num1 = 5  Num2 = 7  Address of Num1 = 0x10 //(This will be different on your machine)  Address of Num 2 = 0x14//(This will be different on your machine)  \*xPtr = 5  \*yPtr = 7  \*sumPtr = 12  xPtr = 0x10 //This output should be same as address of num1 i.e. &num1  yPtr = 0x14 //This output should be same as address of num2 i.e. &num2 |

**Help:**

|  |
| --- |
| cout<<”Num1 = ”<<num1<<endl; // Prints Num1 = 5  sum = \*xPtr + \*yPtr // Add num1 and num2 using \*xPtr and \*yPtr and save the result in integer sum |

**Exercise 2: Dry run the piece of code given below on paper and verify your result by executing this code on Visual Studio.**

|  |
| --- |
| #include<iostream>  using namespace std;  void main()  {  int x = 5;  int y = 7;  int temp;  int\* xPtr;  int\* yPtr;  int\* tempPtr;    xPtr = &x;  yPtr = &y;  tempPtr = &temp;  \*tempPtr = \*xPtr;  \*xPtr = \*yPtr;  \*yPtr = \*tempPtr;  cout<<"x = "<<x<<endl;  cout<<"y = "<<y<<endl;  tempPtr = xPtr;  xPtr = yPtr;  yPtr = tempPtr;  cout<<"x = "<<x<<endl;  cout<<"y = "<<y<<endl;  } |