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//  CS264_Study_Material
//  Created by Stephen O Brien on 27/11/2017.

//

 //VECTORS AND ACCESSING VECTOR ELEMENTS \\

#include <iostream>
#include <vector>
using namespace std;

int main() {


    //Declaring a vector of integers and listing the elements.

    vector<int> vec;

    for (int i = 0; i<10; i++)

    {
        /* to insert a datatype to a vector. We need to use it like a stack or a
         queue. The vector type has built in methods to help with this.
         We use the "vec.PUSH_BACK(datatype)" to push a datatype into a lot of a
          vector. It must be worth noting that a vectors original slot is at 0.
         */
        vec.push_back(i);


    }

    //declaring a pointer to this vector

    vector <int>  *p_vec = &vec;     //notice how the * is on the variable name,
     it's addresss is pointing towards the original vector created.


    for (int i = 0; i<10; i++)
    {
         /* we create an array to print out the values pushed into the original
          vector. whats happening is that we are trying to access the elements of
          the
          pointer that is pointing towards the vector of integers. However, we
           need some sort of way of finding the values. The '->AT' lets us see
          what is in the slot, like an array. Therefore the (i) can be used to
           find all elements that have been pushed.

          When calling the slots of the vector, the program will crash if it goes
           out of bounds. ie, if you only push 9 elements but attempt to call 10.
        */
        cout<<p_vec->at(i)<<endl;
    }

    return 0;
}
```