***DSA LAB***

Task 1:

#include <iostream>

using namespace std;

int main()

{

    cout<<"Integer:"<<sizeof(int)<<endl;

    cout<<"Long:"<<sizeof(long)<<endl;

    cout<<"Float:"<<sizeof(float)<<endl;

    cout<<"Double:"<<sizeof(double)<<endl;

    cout<<"Character:"<<sizeof(char)<<endl;

}

A black screen with white text

Description automatically generated

**Task 2:**  
Q1: The memory address varies by 4 because the pointer points to an integer and it occupies 4 bytes. Hence there are 4 blocks of memory reserved for each integer address.

Q2: No it wont because a Long Data Type also occupies 4 bytes of memory hence the same result as an integer.

Q3: The address cannot be multiplied until and unless it is dereferenced using the asterisk. The error message shown is

*error: invalid operands of types 'int\*' and 'int' to binary 'operator\*'*

*int result =p\*2;*

#include <iostream>

using namespace std;

int main()

{

    int a=5;

    int \*p= &a;

    int result =p\*2;

    cout<<result;

}

**Task 3:**

#include <iostream>

using namespace std;

int main() {

    // Defines an integer array 'list' with 5 elements and initialize it

    int list[5] = {3, 6, 9, 12, 15};

    // Creates an integer pointer 'pArr' and points it to the 'list' array

    int \*pArr = list;

    int i = 0;

    // Use a while loop to iterate through the 'list' array

    while (i != 5) {

        // Print the value pointed to by 'pArr' at index 'i'

        cout << \*(pArr + i) << " ";

        // Increment 'i' to move to the next element in the array

        i++;

    }

    // The loop will print: 3 6 9 12 15 followed by a space

    return 0;

}

**Task 4:**

Output 1:

1

4

7

9

In the commented line, the pointer that was first pointing to the 2nd element started pointing to the 4th element.

Output 2:  
4 4 5 7

**Task 5:**

#include <iostream>

using namespace std;

void swap\_address(int &a,int&b)

{

    int temp=0;

    temp =a;

    a=b;

    b=temp;

}

void swap\_pointers(int\*\* a,int\*\* b)

{

    int temp = \*\*a;

    \*\*a  = \*\*b ;

    \*\*b  = temp;

}

int main()

{

    int a=5, b=10;

    swap\_address(a,b);

    cout<<"Swapped Values are: "<<a<<','<<b;

    int \*pa=&a; //pa and pb are pointer variables of type int.

    int \*pb=&b;

    int \*\*ppa=&pa; //ppa and ppb are called double pointers or pointers-to-pointers.

    int \*\*ppb=&pb;

    swap\_pointers(ppa,ppb);

    cout<<"\nSwapped Values are: "<<a<<','<<b;

}

