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**ASSIGNMENT 1**

**SOLUTION**

#include <iostream>

#include <string>

using namespace std;

class List {

int arr[10];

int index;

public:

string err\_message = "Invalid!";

List();

void add(int a);

void remove(int a);

void removeAt(int key);

void addAt(int a, int index);

void search(int a);

void addStart(int a);

void addLast(int a);

void display();

};

List::List() {

index = 0;

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

arr[i] = 0;

}

}

void List::add(int num) {

int i = 0;

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

if (arr[i] == 0)

arr[i] = num;

break;

}

display();

cout << "THIS IS THE ADD FUNCTION" << endl << endl;

}

void List::remove(int num) {

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

if (arr[i] == num) {

arr[i] = 0;

arr[i] = arr[i + 1];

cout << "The number at index[" << i << "] has been removed" << endl;

}

}

display();

cout << "THIS IS THE REMOVE FUNCTION" << endl << endl;

}

void List::removeAt(int key) {

for (int i = key; i < 10; i++) {

arr[i] = arr[i + 1];

}

cout << "The record at index [" << key << "] has been removed!" << endl;

display();

cout << "THIS IS THE REMOVE AT FUNCTION" << endl << endl;

}

void List::addAt(int a, int index) {

if (arr[index] == 0)

arr[index] = a;

else {

for (int i = index; index < 10; i++) {

arr[i + 1] = arr[i];

}

arr[index] = a;

}

display();

cout << "THIS IS THE ADD AT FUNCTION" << endl << endl;

}

void List::search(int a) {

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

if (arr[i] == a) {

cout << "The record has been found at index[" << i << "]" << endl;

}

}

cout << "THIS IS THE SEARCH FUNCTION" << endl << endl;

}

void List::addStart(int a) {

if (arr[0] == 0) {

arr[0] = a;

}

else {

for (int i = 49; i >= 0; i--) {

arr[i] = arr[i - 1];

}

}

arr[0] = a;

display();

cout << "THIS IS THE ADD AT START FUNCTION" << endl << endl;

}

void List::addLast(int a) {

if (arr[49] == 0)

arr[49] = a;

else {

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

arr[i] = arr[i + 1];

}

arr[49] = a;

}

display();

cout << "THIS IS THE ADD AT LAST FUNCTION" << endl << endl;

}

void List::display() {

int num;

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

num = i;

if (arr[i] != 0) {

cout << endl << "index[" << num << "]\t" << arr[i] << endl;

}

}

}

int main() {

cout << "RECORD KEEPING" << endl;

List phBook;

phBook.add(1234);

phBook.remove(1234);

phBook.removeAt(0);

phBook.addAt(314, 5);

phBook.search(314);

phBook.addStart(89);

phBook.addLast(123);

return 0;

}

**OUTPUT:**

