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//      Course: CS2400-60 Computer Science 2
//      Name: Abdalkarim, Marina
//      Assignment: Programming Assignment P3.1
//      Date assigned: 10/2/18
//      Date due: 10/11/17
//      Date handed in: 10/11/17
//      Remark: The program tests struct program
```

```
#include <iostream>
using namespace std;
void binarySearch(int score[], int n, int key);
void selectionSort(int score[], int n);
void fill_array(int score[], int n);
void display_array(int score[], int n);
int main()
{
    int find;
    const int SIZE = 10;
    int a[SIZE];
    cout << "Fill the array: ";
    fill_array(a, SIZE);
    cout << "The array is: ";
    display_array(a, SIZE);
    selectionSort(a, SIZE);
    cout << "...Sorting..." << endl;
    display_array(a, SIZE);
    cout << "Search: ";
    cin >> find;
    binarySearch(a, SIZE, find);
    return 0;
}
void fill_array(int score[], int n)
{
    for (int i = 0; i < n; i++)
        cin >> score[i];
}
void display_array(int score[], int n)
{
    for (int i = 0; i < n; i++)
        cout << score[i] << endl;
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}
void selectionSort(int score[], int n)
{
    for (int j = 0; j < n - 1; j++)
    {
        int Min = j;
        for (int i = j + 1; i < n; i++)
            if (score[i] < score[Min])
                Min = i;
        if (Min != j)
            swap(score[j], score[Min]);
    }
}

void binarySearch(int score[], int n, int key)
{
    int mid;
    bool a = false;
    mid = score[n / 2];
    if (mid == key)
    {
        cout << "x[" << mid - 1 << "]" << endl;
        a = true;
    }
    else
    {
        for (int i = (n / 2); i > 0; i--)
        {
            if (score[i] == key)
            {
                cout << "x[" << i << "]" << endl;
                a = true;
            }
            else
                a = false;
        }
        if (a == false)
            cout << "-1" << endl;
    }
}

```

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```
-bash-3.2$ date
Fri Oct  5 11:01:45 EDT 2018
-bash-3.2$ pwd
/students/abdalkam
-bash-3.2$ ls
F2018          assign.cpp    first.cpp     local.login
a.out          f2018         local.cshrc   local.profile
-bash-3.2$ g++ assign.cpp
-bash-3.2$ ls
F2018          assign.cpp    first.cpp     local.login
a.out          f2018         local.cshrc   local.profile
-bash-3.2$ a.out
Fill the array: 2 4 6 8 0 1 3 5 7 9
The array is: 2
4
6
8
0
1
3
5
7
9
...Sorting...
0
1
2
3
4
5
6
7
8
9
Search: 2
x[2]
-1
-bash-3.2$
```

cs.wpunj.edu - PuTTY

```
-bash-3.2$ date
Fri Oct  5 11:07:23 EDT 2018
-bash-3.2$ pwd
/students/abdalkam
-bash-3.2$ ls
F2018          f2018          local.login
a.out          first.cpp      local.profile
assign.cpp     local.cshrc
-bash-3.2$ g++ assign.cpp
-bash-3.2$ ls
F2018          f2018          local.login
a.out          first.cpp      local.profile
assign.cpp     local.cshrc
-bash-3.2$ a.out
Fill the array: 2 4 6 8 0 1 3 5 7 9
The array is: 2
4
6
8
0
1
3
5
7
9
...Sorting...
0
1
2
3
4
5
6
7
8
9
Search: 11
-1
-bash-3.2$
```

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//      Course: CS2400-60 Computer Science 2
//      Name: Abdalkarim, Marina
//      Assignment: Programming Assignment P3.2
//      Date assigned: 10/2/18
//      Date due: 10/11/17
//      Date handed in: 10/11/17
//      Remark: The program calculates totals
#include <iostream>
#include <iomanip>
#include <cmath>
using namespace std;
void fill2DArray(int x[][5], int z, int y);
void computeQtrlySums(int x[][5], int a[], int z, int y, int b);
void computeBranchSums(int x[][5], int a[], int z, int y, int b);
void displayYearlySalesReport(int x[][5], int a[], int d[], int z, int y);
int main()
{
    const int row = 4, col = 5, quart = 4, bran = 5;
    int sales[row][col];
    int qtrlySum[quart];
    int branchSum[bran];
    fill2DArray(sales, row, col);
    computeQtrlySums(sales, qtrlySum, row, col, quart);
    computeBranchSums(sales, branchSum, row, col, bran);
    displayYearlySalesReport(sales, qtrlySum, branchSum, row, col);
    return 0;
}
void fill2DArray(int x[][5], int z, int y)
{
    cout << "Enter up to " << z << " rows of integers; " << endl;
    cout << "Each row may contain up to " << y << " numbers." << endl;
    for (int r = 0; r < z; r++)
    {
        cout << "Enter numbers for row #" << r + 1 << ": ";
        for (int c = 0; c < y; c++)
            cin >> x[r][c];
    }
}
void computeQtrlySums(int x[][5], int a[], int z, int y, int b)

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{
    int sum1 = 0, sum2 = 0, sum3 = 0, sum4 = 0;
    for (int c = 0; c < y; c++)
    {
        sum1 += x[0][c];
        sum2 += x[1][c];
        sum3 += x[2][c];
        sum4 += x[3][c];
    }
    a[0] = sum1;
    a[1] = sum2;
    a[2] = sum3;
    a[3] = sum4;
}

void computeBranchSums(int x[][5], int a[], int z, int y, int b)
{
    int sum1 = 0, sum2 = 0, sum3 = 0, sum4 = 0, sum5 = 0;
    for (int r = 0; r < z; r++)
    {
        sum1 += x[r][0];
        sum2 += x[r][1];
        sum3 += x[r][2];
        sum4 += x[r][3];
        sum5 += x[r][4];
    }
    a[0] = sum1;
    a[1] = sum2;
    a[2] = sum3;
    a[3] = sum4;
    a[4] = sum5;
}

void displayYearlySalesReport(int x[][5], int a[], int d[], int z, int y)
{
    for (int r = 0; r < z; r++)
    {
        cout << setw(12) << "";
        for (int c = 0; c < y; c++)
            cout << setw(4) << x[r][c] << "    ";
        cout << setw(4) << a[r] << endl;
    }
}

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    }
    cout << setw(12) << "";
    for (int c = 0; c < y; c++)
        cout << setw(4) << d[c] << "    ";
    cout << endl << endl;
}

```

The screenshot shows a PuTTY terminal window titled "cs.wpunj.edu - PuTTY". The terminal output shows the execution of a C++ program. The program prints the date, the current directory, and the contents of the directory. It then prompts the user to enter up to 4 rows of integers, with each row containing up to 5 numbers. The user enters the following numbers:

150000	273550	124300	57800	79430	685080
123350	100500	277000	39540	98430	638820
67000	232000	122500	17000	320000	758500
95000	76000	87000	250000	240000	748000
435350	682050	610800	364340	737860	

The terminal prompt is now ready for the next command.