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#include <stdio.h>

#include <math.h>

// Function to calculate the minimum value

int calculateMin(int data[], int n) {

int min = data[0];

for (int i = 1; i < n; i++) {

if (data[i] < min) {

min = data[i];

}

}

return min;

}

// Function to calculate the maximum value

int calculateMax(int data[], int n) {

int max = data[0];

for (int i = 1; i < n; i++) {

if (data[i] > max) {

max = data[i];

}

}

return max;

}

// Function to calculate the mode

int calculateMode(int data[], int n) {

int mode = data[0];

int maxCount = 1;

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

int count = 0;

for (int j = 0; j < n; j++) {

if (data[j] == data[i]) {

count++;

}

}

if (count > maxCount) {

maxCount = count;

mode = data[i];

}

}

return mode;

}

// Function to calculate the standard deviation

float calculateStandardDeviation(int data[], int n, float mean) {

float variance = 0;

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

variance += (data[i] - mean) \* (data[i] - mean);

}

return sqrt(variance / n);

}

// Function to calculate the variance

float calculateVariance(int data[], int n, float mean) {

float variance = 0;

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

variance += (data[i] - mean) \* (data[i] - mean);

}

return variance / n;

}

// Function to display the report of the data

void displayReport(int data[], int n) {

printf("Daily Unit Production Report:\n");

printf("Data: ");

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

printf("%d ", data[i]);

}

printf("\n");

int min = calculateMin(data, n);

int max = calculateMax(data, n);

int mode = calculateMode(data, n);

float mean = (float)calculateMax(data, n);

float stdDev = calculateStandardDeviation(data, n, mean);

float variance = calculateVariance(data, n, mean);

printf("Minimum: %d\n", min);

printf("Maximum: %d\n", max);

printf("Mode: %d\n", mode);

printf("Mean: %.2f\n", mean);

printf("Standard Deviation: %.2f\n", stdDev);

printf("Variance: %.2f\n", variance);

}

// Function to search for a value in the data

void searchData(int data[], int n) {

int target;

printf("Enter the value to search for: ");

scanf("%d", &target);

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

if (data[i] == target) {

printf("%d found at index %d.\n", target, i);

return;

}

}

printf("%d not found in the data.\n", target);

}

int main() {

int data[] = {18, 25, 25, 39, 12, 45, 47};

int n = sizeof(data) / sizeof(data[0]);

int choice;

while (1) {

printf("\nDaily Unit Production Analysis Menu\n");

printf("1. Display Report\n");

printf("2. Search Value\n");

printf("3. Exit\n");

printf("Enter your choice: ");

scanf("%d", &choice);

switch (choice) {

case 1:

displayReport(data, n);

break;

case 2:

searchData(data, n);

break;

case 3:

printf("Exiting the program. Goodbye!\n");

return 0;

default:

printf("Invalid choice. Please try again.\n");

}

}

return 0;

}