Assignment 8

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#include <stdio.h>

// Function prototypes
void inputArray(int arr[], int size);
void printArray(int arr[], int size);
void findMaxMin(int arr[], int size);
void findSum(int arr[], int size);
void printEvenOdd(int arr[], int size);
void printAlternate(int arr[], int size);
int isPrime(int n);
void printPrimes(int arr[], int size);
void sumArrays(int arr1[], int arr2[], int result[], int size);
void mergeArrays(int arr1[], int arr2[], int merged[], int size);
void reverseArray(int arr[], int size);
void sortArray(int arr[], int size);

int main() {
    int arr[8] = {6, 2, 7, 4, 9, 13, 5, 8};
    int arr1[5] = {1, 2, 3, 4, 5};
    int arr2[5] = {10, 20, 30, 40, 50};
    int result[5];
    int merged[10];

    printf("Original Array:\n");
    printArray(arr, 8);

    findMaxMin(arr, 8);
    findSum(arr, 8);
    printEvenOdd(arr, 8);
    printAlternate(arr, 8);
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    printPrimes(arr, 8);

    sumArrays(arr1, arr2, result, 5);
    printf("Sum of Arrays:\n");
    printArray(result, 5);

    mergeArrays(arr1, arr2, merged, 5);
    printf("Merged Array:\n");
    printArray(merged, 10);

    reverseArray(arr, 8);
    printf("Reversed Array:\n");
    printArray(arr, 8);

    sortArray(arr, 8);
    printf("Sorted Array:\n");
    printArray(arr, 8);

    return 0;
}

void inputArray(int arr[], int size) {
    for (int i = 0; i < size; i++) {
        printf("Enter element at index %d: ", i);
        scanf("%d", &arr[i]);
    }
}

void printArray(int arr[], int size) {
    for (int i = 0; i < size; i++) {
        printf("%d ", arr[i]);
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    }
    printf("\n");
}

void findMaxMin(int arr[], int size) {
    int max = arr[0], min = arr[0];
    for (int i = 1; i < size; i++) {
        if (arr[i] > max) max = arr[i];
        if (arr[i] < min) min = arr[i];
    }
    printf("Max: %d, Min: %d\n", max, min);
}

void findSum(int arr[], int size) {
    int sum = 0;
    for (int i = 0; i < size; i++) {
        sum += arr[i];
    }
    printf("Sum: %d\n", sum);
}

void printEvenOdd(int arr[], int size) {
    for (int i = 0; i < size; i++) {
        if (arr[i] % 2 == 0)
            printf("Even: %d\n", arr[i]);
        else
            printf("Odd: %d\n", arr[i]);
    }
}

void printAlternate(int arr[], int size) {
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    printf("Even Positions:\n");
    for (int i = 0; i < size; i += 2)
        printf("Index %d: %d\n", i, arr[i]);

    printf("Odd Positions:\n");
    for (int i = 1; i < size; i += 2)
        printf("Index %d: %d\n", i, arr[i]);
}

int isPrime(int n) {
    if (n < 2) return 0;
    for (int i = 2; i * i <= n; i++)
        if (n % i == 0)
            return 0;
    return 1;
}

void printPrimes(int arr[], int size) {
    printf("Prime Numbers: ");
    for (int i = 0; i < size; i++) {
        if (isPrime(arr[i]))
            printf("%d ", arr[i]);
    }
    printf("\n");
}

void sumArrays(int arr1[], int arr2[], int result[], int size) {
    for (int i = 0; i < size; i++) {
        result[i] = arr1[i] + arr2[i];
    }
}
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void mergeArrays(int arr1[], int arr2[], int merged[], int size) {
   for (int i = 0; i < size; i++) {
      merged[i] = arr1[i];
      merged[i + size] = arr2[i];
   }
}

void reverseArray(int arr[], int size) {
   for (int i = 0; i < size / 2; i++) {
      int temp = arr[i];
      arr[i] = arr[size - 1 - i];
      arr[size - 1 - i] = temp;
   }
}

void sortArray(int arr[], int size) {
   for (int i = 0; i < size - 1; i++) {
      for (int j = i + 1; j < size; j++) {
         if (arr[i] > arr[j]) {
            int temp = arr[i];
            arr[i] = arr[j];
            arr[j] = temp;
         }
      }
   }
}
```