CSE 332: Data Abstractions

Section 6: ForkJoin Practice

0. lessThan7

```java
public static int lessThan7(int[] arr)
Returns the number of elements in arr that are less than 7.
```

For example, if arr is [21, 7, 6, 8, 17, 1], then lessThan7(arr) == 2.

Your code must have \( O(n) \) work, \( O(lg n) \) span, where \( n \) is the length of arr.

1. parity

```java
public static int parity(int[] arr)
Returns true if there are an even number of even numbers and false otherwise.
```

For example, if arr is [1, 7, 4, 3, 6], then parity(arr) == true. But, if arr is [6, 5, 4, 3, 2, 1], parity(arr) == false.

Your code must have \( O(n) \) work, \( O(lg n) \) span, where \( n \) is the length of arr.

2. countStrs

```java
public static int countStrs(String str, String[] arr)
Returns the number of elements in arr that equal str.
```

For example, if arr is ["h", "ee", "llll", "llll", "oo", "llll"], then

countStrs("llll", arr) == 3 and countStrs("h", arr) == 1.

Your code must have \( O(n) \) work, \( O(lg n) \) span, where \( n \) is the length of arr.

3. secondSmallest

```java
public static int secondSmallest(int[] arr)
Returns the second smallest element of arr.
```

For example, if arr is [1, 7, 4, 3, 6], then secondSmallest(arr) == 3. But, if arr is [6, 1, 4, 3, 5, 2, 1], secondSmallest(arr) == 2.

Your code must have \( O(n) \) work, \( O(lg n) \) span, where \( n \) is the length of arr.

4. powmod

```java
public static void powmod(int[] arr, int p, int m)
Replaces every element of arr with arr[i]^p mod m.
```

For example, if arr is [1, 7, 4, 3, 6], then powmod(arr, 2, 5) would result in

arr = [1, 4, 1, 4, 1].

Your code must have \( O(n) \) work, \( O(lg n) \) span, where \( n \) is the length of arr.