JavaScript for QA Problem Set 3 Solutions

Problem 1: Sum of Values Inside Objects within an Array

You have an array of objects, each containing a ‘price‘ and a ‘quantity‘. Write a function to calculate the total value (i.e., ‘price * quantity‘ for each item) and return the sum.

```
const items = [
  { name: "item1", price: 10, quantity: 2 },
  { name: "item2", price: 5, quantity: 5 },
  { name: "item3", price: 7, quantity: 3 }
];

function totalValue(arr) {
  let sum = 0;
  for (let item of arr) {
    sum += item.price * item.quantity;
  }
  return sum;
}

console.log(totalValue(items)); // Output: 66
```

Problem 2: Find an Object by Property Inside an Array

Given an array of objects where each object represents a product with properties like ‘id‘, ‘name‘, and ‘price‘, write a function to find the product with a specific ‘id‘.

```
const products = [
  { id: 1, name: "Apple", price: 2 },
  { id: 2, name: "Banana", price: 1 },
  { id: 3, name: "Cherry", price: 3 }
];

function findProductById(arr, id) {
  return arr.find(product => product.id === id);
}

console.log(findProductById(products, 2)); // Output:
   { id: 2, name: "Banana", price: 1 }
```

Problem 3: Flatten an Array of Objects (Nested Objects Inside Arrays)

Given an array of objects, some of which contain nested objects, write a function that flattens the structure and returns a new array where all nested properties are at the top level.

```
const people = [
  { name: "Alice", address: { city: "New York", zip:
      "10001" }, age: 25 },
  { name: "Bob", address: { city: "Los Angeles", zip:
      "90001" }, age: 30 }
];

function flattenArray(arr) {
  return arr.map(person => ({
    name: person.name,
    city: person.address.city,
    zip: person.address.zip,
    age: person.age
  }));
}

console.log(flattenArray(people));
```

Problem 4: Extract All Keys and Values from Objects in an Array

You have an array of objects, and each object has different keys. Write a function to extract all the keys and their corresponding values from the objects and return an array of objects that contain the ‘key‘ and ‘value‘.

```
const data = [
  { name: "Alice", age: 25 },
  { city: "New York", zip: "10001" },
  { name: "Bob", age: 30, city: "Los Angeles" }
];

function extractKeysAndValues(arr) {
  let result = [];
  arr.forEach(obj => {
    for (let key in obj) {
      result.push({ key: key, value: obj[key] });
    }
  });
  return result;
}

console.log(extractKeysAndValues(data));
```

Problem 5: Remove a Key from Objects in an Array

Given an array of objects, remove a specific key from each object.

```
const items = [
  { name: "item1", price: 10, quantity: 2 },
  { name: "item2", price: 5, quantity: 5 },
  { name: "item3", price: 7, quantity: 3 }
];

function removeKey(arr, key) {
  return arr.map(item => {
    const { [key]: _, ...rest } = item; // Removing
       the key using destructuring
    return rest;
  });
}

console.log(removeKey(items, "quantity"));
```

Problem 6: Convert an Array of Objects into a Single Object

You have an array of objects where each object has a ‘key‘ and ‘value‘. Write a function to convert this array into a single object.

```
const keyValuePairs = [
  { key: "name", value: "Alice" },
  { key: "age", value: 25 },
  { key: "city", value: "New York" }
];

function convertToObject(arr) {
  return arr.reduce((acc, curr) => {
    acc[curr.key] = curr.value;
    return acc;
  }, {});
}

console.log(convertToObject(keyValuePairs));
```

Problem 7: Find the Object with the Highest Value Inside an Array of Objects

Given an array of objects with properties like ‘name‘ and ‘score‘, find the object with the highest score.

```
const students = [
  { name: "Alice", score: 85 },
  { name: "Bob", score: 92 },
  { name: "Charlie", score: 88 }
];

function findHighestScore(arr) {
  return arr.reduce((max, student) => (student.score >
      max.score ? student : max), arr[0]);
}

console.log(findHighestScore(students)); // Output: {
   name: "Bob", score: 92 }
```