10 RegEx Problems

Problem 1: Extract Email Addresses

Description: Extract all email addresses from the given text.

Sample Text:

```
Contact us at support@example.com or sales@company.org for assistance.
For personal inquiries, email john.doe123@university.edu.
```

Expected Output:

```
support@example.com
sales@company.org
john.doe123@university.edu
```

Problem 2: Validate Phone Numbers

Description: Check if the phone numbers in the text follow the format: `XXX-XXX-XXXX`.

Sample Text:

```
Valid: 123-456-7890, 987-654-3210
Invalid: 12-345-67890, 1234567890, 123-45-6789
```

Expected Output:

```
Valid phone numbers:
123-456-7890
987-654-3210
```

Problem 3: Extract Dates

Description: Extract all dates in the format `DD/MM/YYYY` or `DD-MM-YYYY` from the text.

Sample Text:

```
Important dates: 25/12/2023, 01-01-2024, 31/05/2023, and 15-10-2024.
```

Expected Output:

```
25/12/2023
01-01-2024
31/05/2023
15-10-2024
```

Problem 4: Find Repeated Words

Description: Find all instances of repeated words in the text (e.g., "the the").

Sample Text:

```
The the quick brown fox jumps over the the lazy dog.
```

Expected Output:

```
 Repeated words:
the the
the the
```

Problem 5: Extract Hashtags

Description: Extract all hashtags (words starting with `#`) from the text.

Sample Text:

```
Check out our new products: #Sale2024, #NewArrival, and #Discounts!
```

Expected Output:

```
 #Sale2024
#NewArrival
#Discounts
```

Problem 6: Validate Password Strength

Description: Check if the passwords meet the following criteria:

- At least 8 characters long
- Contains at least one uppercase letter
- Contains at least one lowercase letter
- Contains at least one digit

Sample Passwords:

```
Valid: Password123, Secure456
Invalid: weak, password, Password
```

Expected Output:

```
 Valid passwords:
Password123
Secure456
```

Problem 7: Extract URLs

Description: Extract all URLs from the given text.

Sample Text:

```
Visit our website at https://www.example.com or check out http://blog.example.org for updates.
```

Expected Output:

```
 https://www.example.com
http://blog.example.org
```

Problem 8: Replace Multiple Spaces with a Single Space

Description: Replace multiple spaces in the text with a single space.

Sample Text:

```
This    text    has    multiple    spaces.
```

Expected Output:

```
This text has multiple spaces.
```

Problem 9: Extract Quoted Text

Description: Extract all text within double quotes (`"..."`).

Sample Text:

```
He said, "Hello, world!" and she replied, "Hi there!"
```

Expected Output:

```
Hello, world!
Hi there!
```

Problem 10: Validate IP Addresses

Description: Check if the IP addresses in the text are valid (format: `XXX.XXX.XXX.XXX`).

Sample Text:

```
Valid: 192.168.1.1, 10.0.0.255
Invalid: 256.1.2.3, 192.168.01.1, 192.168.1
```

Expected Output:

```
Valid IP addresses:
192.168.1.1
10.0.0.255
```