

Explanation:

Logic:

1. Time Validation:

- Check if the working hours fall within **11 PM (23:00)** to **6 AM**:

csharp

Code kopieren

```
var isNightHours = (startTime.Hour >= 23 || startTime.Hour < 6) ||
```

```
(endTime.Hour >= 23 || endTime.Hour < 6);
```

2. Sunday and Public Holiday Exclusion:

- Check if the start or end times fall on a **Sunday** or a **public holiday**:

csharp

Code kopieren

```
var isSunday = startTime.DayOfWeek == DayOfWeek.Sunday ||
```

```
endTime.DayOfWeek == DayOfWeek.Sunday;
```

```
var isPublicHoliday = DateSystem.IsPublicHoliday(startTime, CountryCode.DE) ||
```

```
DateSystem.IsPublicHoliday(endTime, CountryCode.DE);
```

3. Surcharge Calculation:

- If the work falls in the night hours and not on Sundays or holidays, calculate the **25% surcharge**:

csharp

Code kopieren

```
decimal nightSurcharge = hourlyRate * 0.25m;
```

```
decimal total = hourlyRate + nightSurcharge;
```

4. Output:

- If valid, return hourly rate, surcharge, total pay, and work time range.
- Otherwise, return an error message.

Inputs:

- **hourlyRate**: Base hourly pay (e.g., €20).
- **startTime**: Start time of the work shift.
- **endTime**: End time of the work shift.