

```
1 using Corp.Services.DataContracts;
2 using Grpc.Net.Client;
3 using Newtonsoft.Json;
4 using ProtoBuf.Grpc.Client;
5 using System;
6 using System.Linq;
7 using System.Net;
8 using System.Text;
9 using System.Threading.Tasks;
10 using static Corp.Resources.Infrastructure.Endpoints.Services;
11
12 namespace Corp.Services.Contracts
13 {
14
15     public class FloodingAlertWorkflowService: IFloodingAlertWorkflowService
16     {
17         public async Task<FloodingAlertWorkflowResponse> StartWorkflow()
18         {
19             FloodingAlertWorkflowResponse response = new();
20             try
21             {
22                 DownloadDataResponse downloadDataResponse = await GetCurrentWaterLevelData();
23                 string filteredCsv = await FilterWaterLevelData(downloadDataResponse);
24                 string windSpeedUrl = GenereateDmiUrl(DmiParameter.WindSpeed);
25                 string windSpeed = await GetWindSpeed(windSpeedUrl);
26
27                 response.WindSpeed = windSpeed;
28                 response.WaterLevel = Int32.Parse(filteredCsv.Split('\n').Last());
29                 response.MessageInfo = "Request succeeded.";
30             }
31             catch(Exception e)
32             {
33                 response.MessageInfo = "Request failed.";
34             }
35             return response;
36         }
37
38         private async Task<DownloadDataResponse> GetCurrentWaterLevelData()
39         {
40             string url = GenerateCoastDirectorateUrl();
41             Uri uri = new Uri(url);
42             DownloadDataRequest request = new DownloadDataRequest() { Uri = uri };
43             string localhostAddress = $"http://localhost:{DataAccessServicePort}";
44             GrpcChannel channel = GrpcChannel.ForAddress(localhostAddress);
45             GrpcClientFactory.AllowUnencryptedHttp2 = true;
46             DownloadDataResponse response;
47             using(channel)
48             {
49                 IDownloadDataService downloadDataService =
50                     channel.CreateGrpcService<IDownloadDataService>();
51                 response = await downloadDataService.DownloadWith(request);
52             }
53             return response;
54         }
55
56         private async Task<string> FilterWaterLevelData(DownloadDataResponse dataResponse)
57         {
58             string localhostAddress = $"http://localhost:{FilterServicePort}";
59             GrpcChannel channel = GrpcChannel.ForAddress(localhostAddress);
60             GrpcClientFactory.AllowUnencryptedHttp2 = true;
61             string csv = Encoding.Default.GetString(dataResponse.Data);
62             int[] keepColumns = new int[] { 1 };
63             CsvFilterRequest filterRequest = new() { Csv = csv, KeepColumns = keepColumns,
64                 RemoveHeader = true };
65             string response;
66             using(channel)
```

```
65     {
66         ITextFilterService textFilter = channel.CreateGrpcService<ITextFilterService>();
67         response = await textFilter.FilterCsvColumns(filterRequest);
68     }
69     return response;
70 }
71
72 private async Task<string> GetWindSpeed(string url)
73 {
74     string windSpeed, response;
75     using(WebClient client = new())
76     {
77         response = await client.DownloadStringTaskAsync(url);
78     }
79     response = response.Substring(1, response.Length - 2);
80     WindSpeedResponse deserializedJson = JsonConvert.DeserializeObject<WindSpeedResponse>
81         (response);
82     windSpeed = deserializedJson.Value.ToString();
83     return windSpeed;
84 }
85
86 private string GenerateCoastDirectorateUrl()
87 {
88     string baseUrl = "https://kystatlas.kyst.dk/public2/data/vandstand/response.aspx?";
89     string station = "6701"; // Vester Vedsted
90     string startDate = DateTime.Today.ToString("yyyyMMdd");
91     string endDate = DateTime.Today.AddDays(1).ToString("yyyyMMdd");
92     string format = "csv";
93     string stationAndDates = $"ident={station}&startdate={startDate}&enddate={endDate}
94         &format={format}";
95     return $"{baseUrl}{stationAndDates}";
96 }
97
98 private string GenereateDmiUrl(DmiParameter parameter)
99 {
100     string url = "https://dmigw.govcloud.dk/metObs/v1/observation?latest=&parameterId=";
101     switch(parameter)
102     {
103         case DmiParameter.WindSpeed:
104             url += "wind_speed";
105             break;
106         case DmiParameter.WindDirection:
107             url += "wind_dir";
108             break;
109         default:
110             break;
111     }
112     url += "&stationId=06093&api-key=5910e131-7fe5-43eb-9a29-bfe480b5f7b8";
113     return url;
114 }
115
116 private enum DmiParameter
117 {
118     WindSpeed,
119     WindDirection
120 }
121
122 public class WindSpeedResponse
123 {
124     [JsonProperty("_id")]
125     public string Id { get; set; }
126
127     [JsonProperty("parameterId")]
128     public string ParameterId { get; set; }
129
130     [JsonProperty("stationId")]
```

```
129         public string StationId { get; set; }
130
131         [JsonProperty("timeCreated")]
132         public double TimeCreated { get; set; }
133
134         [JsonProperty("timeObserved")]
135         public double TimeObserved { get; set; }
136
137         [JsonProperty("value")]
138         public double Value { get; set; }
139     }
140 }
141 }
```