

Quickstart: Search the web using the Bing Web Search REST API and C#

05/22/2020 • 6 minutes to read •  +5

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Use this quickstart to make your first call to the Bing Web Search API. This C# application sends a search request to the API, and shows the JSON response. Although this application is written in C#, the API is a RESTful Web service compatible with most programming languages.

This example program in this quickstart uses only .NET Core classes.

Prerequisites

Here are a few things that you'll need before running this quickstart:

- Windows: [Visual Studio 2017 or later](#)
- Linux/macOS: [Mono](#)
- A subscription key

Create an Azure resource

Start using the Bing Web Search API by creating one of the following Azure resources:

Bing Search v7 resource


- Available through the Azure portal until you delete the resource.
- Use the free pricing tier to try the service, and upgrade later to a paid tier for production.

Multi-service resource

- Available through the Azure portal until you delete the resource.
- Use the same key and endpoint for your applications, across multiple Cognitive Services.


Create a project and declare dependencies

Create a new project in Visual Studio or Mono. Use the following code to import the required namespaces and types:

C#	 Copy
<pre>using System; using System.Text; using System.Net; using System.IO; using System.Collections.Generic;</pre>	

Declare a namespace and class for your program

In this quickstart, we'll put most of the code in the `Program` class. Start by creating the `BingSearchApiQuickstart` namespace and `Program` class in your project.

C#	 Copy
<pre>namespace BingSearchApisQuickstart { class Program { // The code in the following sections goes here. } }</pre>	

Define variables

A few variables must be set before we can continue. Add this code to the `Program` class you created in the previous section:

1. For the `uriBase` value, you can use the global endpoint in the following code, or use the [custom subdomain](#) endpoint displayed in the Azure portal for your resource.
2. Confirm that `uriBase` is valid and replace the `accessKey` value with a subscription key from your Azure account.
3. Optionally, customize the search query by replacing the value for `searchTerm`.

C#

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```
// Enter a valid subscription key.
const string accessKey = "enter key here";
/*
 * If you encounter unexpected authorization errors, double-check this value
 * against the endpoint for your Bing Web search instance in your Azure
 * dashboard.
 */
const string uriBase =
"https://api.cognitive.microsoft.com/bing/v7.0/search";
const string searchTerm = "Microsoft Cognitive Services";
```

Declare the Main method

The `Main()` method is required and is the first method invoked when you start the program. In this application, the main method validates the `accessKey`, makes a request, and prints the response.

The `main()` method is dependent on methods that you create in the next sections.

C#

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```
static void Main()
{
    Console.OutputEncoding = System.Text.Encoding.UTF8;
    if (accessKey.Length == 32)
    {
        Console.WriteLine("Searching the Web for: " + searchTerm);
        SearchResult result = BingWebSearch(searchTerm);
        Console.WriteLine("\nRelevant HTTP Headers:\n");
        foreach (var header in result.relevantHeaders)
            Console.WriteLine(header.Key + ": " + header.Value);

        Console.WriteLine("\nJSON Response:\n");
    }
}
```

```
        Console.WriteLine(JsonPrettyPrint(result.jsonResult));
    }
    else
    {
        Console.WriteLine("Invalid Bing Search API subscription key!");
        Console.WriteLine("Please paste yours into the source code.");
    }
    Console.Write("\nPress Enter to exit ");
    Console.ReadLine();
}
```

Create a struct for search results

Create a struct that returns search results with relevant headers. You call it when you make a request to the Bing Web Search API to create a result object.

C#



```
// Returns search results with headers.
struct SearchResult
{
    public String jsonResult;
    public Dictionary<String, String> relevantHeaders;
}
```

Construct a request

Use this code to construct the search query, perform the GET request, and handle the response.

C#



```
/// <summary>
/// Makes a request to the Bing Web Search API and returns data as a
/// SearchResult.
/// </summary>
static SearchResult BingWebSearch(string searchQuery)
{
    // Construct the search request URI.
    var uriQuery = uriBase + "?q=" + Uri.EscapeDataString(searchQuery);

    // Perform request and get a response.
    WebRequest request = HttpWebRequest.Create(uriQuery);
    request.Headers["Ocp-Apim-Subscription-Key"] = accessKey;
    HttpResponseMessage response =
        (HttpWebResponse)request.GetResponseAsync().Result;
    string json = new
```

```
StreamReader(response.GetResponseStream()).ReadToEnd());

// Create a result object.
var searchResult = new SearchResult()
{
    jsonResult = json,
    relevantHeaders = new Dictionary<String, String>()
};

// Extract Bing HTTP headers.
foreach (String header in response.Headers)
{
    if (header.StartsWith("BingAPIs-") || header.StartsWith("X-MSEdge-"))
        searchResult.relevantHeaders[header] = response.Headers[header];
}
return searchResult;
}
```

Format the response

This method formats the JSON response, primarily by indenting and adding line breaks.

C#

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```
/// <summary>
/// Formats the JSON string by adding line breaks and indents.
/// </summary>
/// <param name="json">The raw JSON string.</param>
/// <returns>The formatted JSON string.</returns>
static string JsonPrettyPrint(string json)
{
    if (string.IsNullOrEmpty(json))
        return string.Empty;

    json = json.Replace(Environment.NewLine, "").Replace("\t", "");

    StringBuilder sb = new StringBuilder();
    bool quote = false;
    bool ignore = false;
    char last = ' ';
    int offset = 0;
    int indentLength = 2;

    foreach (char ch in json)
    {
        switch (ch)
        {
            case '"':
                if (!ignore) quote = !quote;
                break;
        }
    }
}
```

```
        case '\\':
            if (quote && last != '\\') ignore = true;
            break;
    }

    if (quote)
    {
        sb.Append(ch);
        if (last == '\\ && ignore) ignore = false;
    }
    else
    {
        switch (ch)
        {
            case '{':
            case '[':
                sb.Append(ch);
                sb.Append(Environment.NewLine);
                sb.Append(new string(' ', ++offset * indentLength));
                break;
            case ']':
            case '}':
                sb.Append(Environment.NewLine);
                sb.Append(new string(' ', --offset * indentLength));
                sb.Append(ch);
                break;
            case ',':
                sb.Append(ch);
                sb.Append(Environment.NewLine);
                sb.Append(new string(' ', offset * indentLength));
                break;
            case ':':
                sb.Append(ch);
                sb.Append(' ');
                break;
            default:
                if (quote || ch != ' ') sb.Append(ch);
                break;
        }
    }
    last = ch;
}
return sb.ToString().Trim();
}
```

Put it all together

The last step is to run your code. If you'd like to compare your code with ours, see the [sample code on GitHub](#).

Example JSON response

Responses from the Bing Web Search API are returned as JSON. This sample response has been truncated to show a single result.

JSON

 Copy

```
{
  "_type": "SearchResponse",
  "queryContext": {
    "originalQuery": "Microsoft Cognitive Services"
  },
  "webPages": {
    "webSearchUrl": "https://www.bing.com/search?q=Microsoft+cognitive+services",
    "totalEstimatedMatches": 22300000,
    "value": [
      {
        "id": "https://api.cognitive.microsoft.com/api/v7/#WebPages.0",
        "name": "Microsoft Cognitive Services",
        "url": "https://www.microsoft.com/cognitive-services",
        "displayUrl": "https://www.microsoft.com/cognitive-services",
        "snippet": "Knock down barriers between you and your ideas. Enable natural and contextual interaction with tools that augment users' experiences via the power of machine-based AI. Plug them in and bring your ideas to life.",
        "deepLinks": [
          {
            "name": "Face",
            "url": "https://azure.microsoft.com/services/cognitive-services/face/",
            "snippet": "Add facial recognition to your applications to detect, identify, and verify faces using the Face service from Microsoft Azure. ... Cognitive Services; Face service;"
          },
          {
            "name": "Text Analytics",
            "url": "https://azure.microsoft.com/services/cognitive-services/text-analytics/",
            "snippet": "Cognitive Services; Text Analytics API; Text Analytics API . Detect sentiment, ... you agree that Microsoft may store it and use it to improve Microsoft services, ..."
          },
          {
            "name": "Computer Vision API",
            "url": "https://azure.microsoft.com/services/cognitive-services/computer-vision/",
            "snippet": "Extract the data you need from images using optical character recognition and image analytics with Computer Vision APIs from Microsoft Azure."
          },
          {
            "name": "Emotion",
```

```

        "url": "https://www.microsoft.com/cognitive-services/en-us/emotion-api",
        "snippet": "Cognitive Services Emotion API - microsoft.com"
    },
    {
        "name": "Bing Speech API",
        "url": "https://azure.microsoft.com/services/cognitive-services/speech/",
        "snippet": "Add speech recognition to your applications, including text to speech, with a speech API from Microsoft Azure. ... Cognitive Services; Bing Speech API;"
    },
    {
        "name": "Get Started for Free",
        "url": "https://azure.microsoft.com/services/cognitive-services/",
        "snippet": "Add vision, speech, language, and knowledge capabilities to your applications using intelligence APIs and SDKs from Cognitive Services."
    }
]
},
"relatedSearches": {
    "id": "https://api.cognitive.microsoft.com/api/v7/#RelatedSearches",
    "value": [
        {
            "text": "microsoft bot framework",
            "displayText": "microsoft bot framework",
            "webSearchUrl": "https://www.bing.com/search?q=microsoft+bot+framework"
        },
        {
            "text": "microsoft cognitive services youtube",
            "displayText": "microsoft cognitive services youtube",
            "webSearchUrl": "https://www.bing.com/search?q=microsoft+cognitive+services+youtube"
        },
        {
            "text": "microsoft cognitive services search api",
            "displayText": "microsoft cognitive services search api",
            "webSearchUrl": "https://www.bing.com/search?q=microsoft+cognitive+services+search+api"
        },
        {
            "text": "microsoft cognitive services news",
            "displayText": "microsoft cognitive services news",
            "webSearchUrl": "https://www.bing.com/search?q=microsoft+cognitive+services+news"
        },
        {
            "text": "ms cognitive service",
            "displayText": "ms cognitive service",
            "webSearchUrl": "https://www.bing.com/search?q=ms+cognitive+service"
        }
    ]
}

```



```

    },
    {
      "text": "microsoft cognitive services text analytics",
      "displayText": "microsoft cognitive services text analytics",
      "webSearchUrl": "https://www.bing.com/search?
q=microsoft+cognitive+services+text+analytics"
    },
    {
      "text": "microsoft cognitive services toolkit",
      "displayText": "microsoft cognitive services toolkit",
      "webSearchUrl": "https://www.bing.com/search?
q=microsoft+cognitive+services+toolkit"
    },
    {
      "text": "microsoft cognitive services api",
      "displayText": "microsoft cognitive services api",
      "webSearchUrl": "https://www.bing.com/search?
q=microsoft+cognitive+services+api"
    }
  ]
},
"rankingResponse": {
  "mainline": {
    "items": [
      {
        "answerType": "WebPages",
        "resultIndex": 0,
        "value": {
          "id": "https://api.cognitive.microsoft.com/api/v7/#WebPages.0"
        }
      }
    ]
  },
  "sidebar": {
    "items": [
      {
        "answerType": "RelatedSearches",
        "value": {
          "id":
"https://api.cognitive.microsoft.com/api/v7/#RelatedSearches"
        }
      }
    ]
  }
}
}
}

```

Next steps

Bing Web Search API single-page app tutorial

See also

- [What is the Bing Web Search API?](#)
- [Bing Web Search API v7 reference](#)

Is this page helpful?

 Yes  No
