

# Web Services

# Web Services

- Method of communication between two machines / applications over web
- Software functions available over the web
- Also termed as Web API

# Web Services

- API
  - Provides a description of functions
  - addressable over web using URIs
- Protocol
  - Used for message exchange
  - HTTP, SOAP, etc.
- Response
  - Machine-readable format
  - XML, JSON, etc.

# Example API (Google Book Search)

- BookSearch
  - Used to search books available on Google Books
  - Inputs :
    - Search string
    - API Key (mandatory for accessing certain aspects)
    - Other optional parameters
  - Output
    - Items
      - Link
      - Volume Info
        - Title
        - Authors
        - Publishers
        - Other information
      - Sale info, access info, search info

# Google Book Search

- Input

- <https://www.googleapis.com/books/v1/volumes?q=Harry%20Potter>



URI

Search string parameter

# Google Book Search

- Output

Standard JSON response

```
{
  "kind": "books#volumes",
  "items": [
    {
      "kind": "books#volume",
      "id": "...",
      "etag": "...",
      "selfLink": "https://www.googleapis.com/books/v1/volumes/...",
      "volumeInfo": {
        "title": "...",
        "authors": [
          "...
        ]
      },
      ...
    },
    ...
  ]
}
```

```
{
  "kind": "books#volumes",
  "totalItems": 2452,
  "items": [
    {
      "kind": "books#volume",
      "id": "u3mzAQAACAAJ",
      "etag": "v4BFPHiCrd4",
      "selfLink": "https://www.googleapis.com/books/v1/volumes/u3mzAQAACAAJ",
      "volumeInfo": {
        "title": "Harry Potter and the Prisoner of Azkaban: The Illustrated Edition",
        "authors": [
          "J. K. Rowling"
        ],
        "publisher": "Arthur A. Levine Books",
        "publishedDate": "2017-10-03",
        "description": "For twelve long years, the dread fortress of Azkaban held an infamous prisoner named Sirius Black..."
      },
      ...
      "pageCount": 336,
      "printType": "BOOK",
      "categories": [
        "Juvenile Fiction"
      ],
      ...
      "saleInfo": { ... },
      "accessInfo": { ... },
      "searchInfo": { ... }
    },
    ...
  ]
  ...
}
```

# Python Client

```
def getBooksFromGoogle(t):
    books = []
    t = t.replace(' ','+')
    with urllib.request.urlopen('https://www.googleapis.com/books/v1/volumes?q='+t) as response:
        obj = json.loads(response.read())

        for x in obj['items']:
            book = Book(x['id'],x['volumeInfo']['title'],")
            books.append(book)

    return books
```