Research Article / Research Project / Literature Review

in fulfillment of the requirements of

Department	Engineering mathematics and physics
Division	
Academic Year	**2019-2020 preparatory**
Course name	Computer
Course code	ECE001

Title: -

Programming languages.

By:

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1	Youssef Sherif Ahmed	Youssif196191@feng.bu.edu.eg	1060

Approved by:

Examiners committee	Signature
Dr. Ahmed Bayoumi	
Dr. Shady Elmashad	
Dr. AbdElHamid Attaby	

Research objectives

The report aims to give a sufficient overview on programing languages, what they are what are their uses, also give fast look on top 4 used language and the field where each is used most.

Abstract

Programming languages these days are used everywhere around us and can do everything human want to do, even it can do human's work, they are used in mobile phone to design applications and games, and used to build-up operating systems, they have the same uses for computers and laptops, also used to develop websites and secure them, they can be used to build-up systems that are applied to machines to work at a specific rate to do specific job, also can be used in a robot to perform tasks.

Table of contents

List of Figures (If any)

Figure I.D	Description	Page

List of Tables (If any)

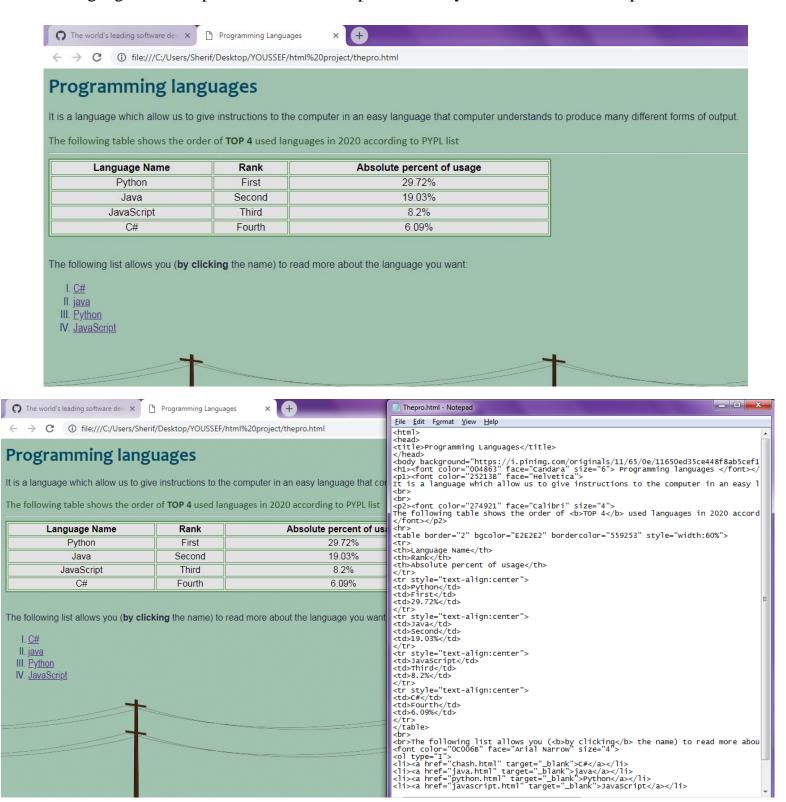| Table I.D	Description	Page

Introduction

It is a language which allow us to give instructions to the computer in an easy language that computer understands to produce many different forms of output.

```
<html>
<head>
<title>Programming Languages</title>
</head>
<body background="https://i.pinimg.com/originals/11/65/0e/11650ed35ce448f8ab5cef13cb09c1b2.png">
<h1><font color="004863" face="Candara" size="6"> Programming languages </font></h1>
<p1><font color="25213B" face="Helvetica">
It is a language which allow us to give instructions to the computer in an easy language that computer understands to produce many different forms of output.
<br>
<br>
<p2><font color="274921" face="Calibri" size="4">
The following table shows the order of <b>TOP 4</b> used languages in 2020 according to PYPL list
</font></p2>
<hr>
<table border="2" bgcolor="E2E2E2" bordercolor="559253" style="width:60%">
<tr>
<th>Language Name</th>
<th>Rank</th>
<th>Absolute percent of usage</th>
</tr>
<tr style="text-align:center">
<td>Python</td>
<td>First</td>
<td>29.72%</td>
</tr>
<tr style="text-align:center">
<td>Java</td>
<td>Second</td>
<td>19.03%</td>
</tr>
<tr style="text-align:center">
<td>JavaScript</td>
<td>Third</td>
<td>8.2%</td>
</tr>
<tr style="text-align:center">
<td>C#</td>
<td>Fourth</td>
<td>6.09%</td>
</tr>
</table>
<br>
<br>The following list allows you (<b>by clicking</b> the name) to read more about the language you want:
<font color="0C006B" face="Arial Narrow" size="4">
<ol type="I">
<li><a href="chash.html" target="_blank">C#</a></li>
<li><a href="java.html" target="_blank">java</a></li>
<li><a href="python.html" target="_blank">Python</a></li>
<li><a href="javascript.html" target="_blank">JavaScript</a></li>
</ol>
</font></p1>
```

<html>

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<title>Programming Languages</title>

</head>

<body background="https://i.pinimg.com/originals/11/65/0e/11650ed35ce448f8ab5cef13cb09c1b2.png">

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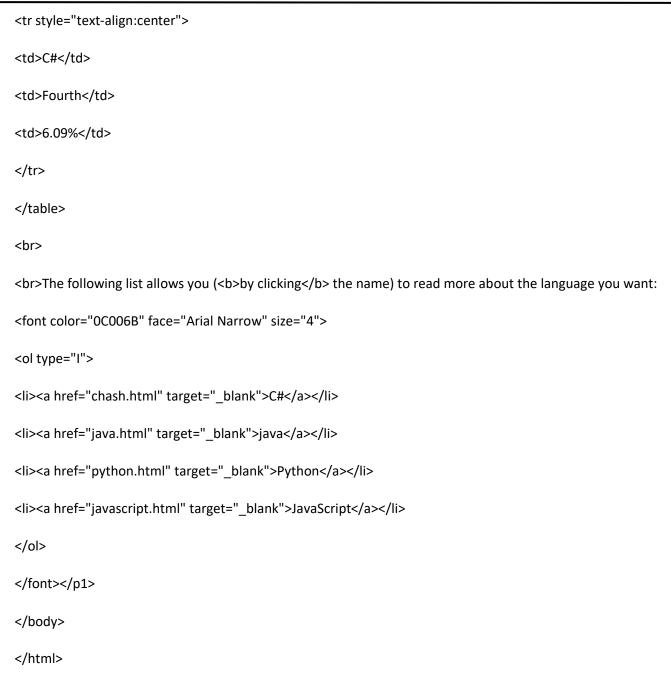<th>Language Name</th>

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<li><a href="javascript.html" target="_blank">JavaScript</a></li>

</ol>

</font></p1>

</body>

</html>
```

C# (C sharp)

Introduction

Pronounced C-sharp (not C-hashtag), it is a programming language characterized by being multi-model that features strong typing, functional, declarative, imperative, generic, object-oriented and component-oriented disciplines. It was created in 2000 by Microsoft as part of its .NET initiative. The free and open-source project is called Mono which develops a compiler and runtime for the language. **C#** is a programming languages which was designed for the Common Language Infrastructure (CLI). **C#** was designed by *Anders Hejlsberg*, and *Mads Torgersen* is the leader of its development team. The most recent version is 8.0, which was released in 2019 alongside Visual Studio 2019 version 16.3

Reasons to use C#

i. Type-safety:

Memory manipulation, which means the allocation and release of memory for a particular application currently working on. This will be helpful and time saving for developers who have to write codes for performing memory manipulation task activities. C# does this automatically for you; this behavior can be helpful in a memory leak and memory access. So, back to the discussion where we left for Type-safety, an unsafe keyword can be used to mark a block of code. This will easily bypass the Framework type type-safety checking. This behavior of C# makes a clear and precise edge over VB.NET
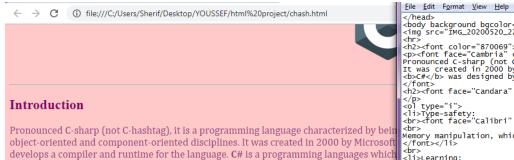
ii. Learning:
Comparing to other Programming languages (PL) learning C # would definitely be a snap. Easy to learn to compare to others. One thing is sure any PL would take sufficient time to learn and equally sufficient time to master but the point of concern is the language complexity to learn. uses of C# is syntactically similar to Java. Have a look at the below-mentioned scenario.

iii. Not Just Microsoft
Just Microsoft? Not any moreEEECMA and MONO project is evidence that says in the favor of applications of C#. ECMA has been a standard publish. MONO a cross-platform application development choice for developers. Refer MONO PROJECT for more details.

Applecations C# can develop

```html
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</head>
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<hr>
<h2><font color="870069">Introduction</font></h2>
<p><font face="Cambria" color="994386" size="4">
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</p>
<ol type="i">
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<ol type="A">
<font face="Perpetua" color="44145B" size="4">
<li>Windows client applications</li>
<li>Windows libraries and components</li>
<li>Native iOS and Android mobile apps</li>
<li>Backend services</li>
<li>Internet of Things (IoT) devices</li>
<li>Artificial Intelligence and Machine learning</li>
<li>Gaming consoles and gaming systems</li>
<li>Video games</li>
</font>
</ol>
<ol type="I">
<li><a href="java.html" target="_blank">java</a></li>
<li><a href="python.html" target="_blank">Python</a></li>
<li><a href="javascript.html" target="_blank">JavaScript</a></li>
<li><a href="thepro.html" target="_blank">Main page</a></li>
```

Java

Java

Introduction:

Java logo

This programming language is a general purpose one, it is class-base, and designed to have aw few problems as possible after implementation. It was created by Sun Microsystems and was released in 1995. It has become the backbone of millions of applications through several platforms like (Windows, macintosh, Android based mobiles). Java syntax is similar to C and C++, but it has facilities fewer than both languages. In 2019, according to **GitHub**, Java was considerd as one of the most popular used programming languages, and according to **Oracle**, we have 3 billion devices which Java runs on.

Some applications that Java runs:

1. **Mobile applications:**
   Java Platform, Micro Edition like (java ME) is a cross-platform framework which is used to build applications that run on all devices that Java support, including smart phones, even more, applications made for Android (one of the most popular operating systems for mobile) are scripted in Java using Android Sofrware Development Kit.

2. **Embedded Systems:**
   Embedded systems, have wide range from tiny chips to specialized computers, represent components of bigger electromechanical systems performing specific tasks. Many devices, such as SIM cards, utility meters and televisions, blue-ray disk players, use embedded Java technologies. According to Oracle, 100% of Blu-ray Disc Players and 125 million TV devices use Java.

3. **Web Applications:**
   Web applicationsare supported by java through Servlets, Struts or JSPs. The ease of programming and higher security that was offered by Java programming language has allowed a great number of government applications for health, education, social security and insurance to be based on Java. Java also finds application in development of eCommerce web applications using open-source eCommerce platforms, such as Broadleaf.

4. **Scientific Applications:**
   Many software developers have unique choice for writing applications involving scientific calculations and mathematical operations which is Java. These programs are fast and secure, the have higher degree of portability and low maintenance. Applications like MATLAB use Java both for interacting user interface and as part of the core system.

   I. C#
   II. Python
   III. JavaScript

file:///C:/Users/Sherif/Desktop/YOUSSEF/html%20project/java.html

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File   Edit   Format   View   Help
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<p><font face="Verdana" color="360073">
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</ol>
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Python

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<font color="" face="Arial" size="4">
Python is a high-level programming language with general purpose. It was created by <i>Guido van Rossum</i> and released for first time in <b>1991</b>,The philosophy of
<br>
<br>
It is one of the top backend languages in 2020 and on the top of PYPL's list.
</p>
<hr>
<h2> <font face="Courier New"> Python Applications </font></h2>
<ol type="A">
<font color="762828" face="Times New Roman">
<li> Web and internet Development
<ol type="a">
<li>Python provides different and various choices for web development:
<ul>
<li>Frameworks such as Django and Pyramid</li>
<li>Micro-frameworks such as Flask and Bottle</li>
</ul>
</li>
<li>Python's standard library supports many Internet protocols:
<ul>
<li>HTML and XML</li>
<li>Support for FTP, IMAP, and other Internet protocols.</li>
<li>E-mail processing.</li>
</ul></li>
</ol>
</li>
<br>
<li>Scientific and numeric computing
<ul>
<li>SciPy is a collection of packages for mathematics, science, and engineering.</li>
<li>Pandas is a data analysis and modeling library.</li>
<li>The Software Carpentry Course teaches basic skills for scientific computing, running bootcamps and providing open-access teaching materials.</li>
</ul></li>
<br>
<li>Software Development.
<p>Python is often used as a support language for software developers, for build control and management, testing, and in many other ways.</p>
<ul>
<li>SCons for build control.</li>
<li>Buildbot and Apache Gump for automated continuous compilation and testing.</li>
</ul>
</li>
<br>
<li>Business Applications
<p>Python is also used to build ERP and e-commerce systems:</p>
```

JavaScript

file:///C:/Users/Sherif/Desktop/YOUSSEF/html%20project/javascript.html

JavaScrips logo

Introduction:

Javascript is abbreviated as JS, it has been a constant trend for several years, is a programming language that conforms to the ECMAScript specification. JavaScript is high-level, often just-in-time compiled, and multi-paradigm. It has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions. Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. Despite its name, JavaScript is not related to Java.

Top 3 Uses of Javascript:

A. Web Development
JavaScript is a client scripting language which is used for creating web pages. It is a standalone language developed in Netscape. It is used when a webpage is to be made dynamic and add special effects on pages like rollover, roll out and many types of graphics. It is mostly used by all websites for the purpose of validation. In addition to validations, it supports external applications like PDF documents, running widgets, supporting for flash applications etc. It can also load content into a document whenever the user requires it without even reloading the entire page.

B. Web Applications
With technology browsers and personal computers have improved to the extent that a language was required to create robust web applications. When a user explores a map in Google Maps then the user just needs to click and drag the mouse. All detailed view is visible by just a click. This is possible due to JavaScript. It interacts with the browser without sending messages to and fro to the servers. JavaScript uses Application Programming Interfaces(APIs) that provide extra powers to the code.

C. Presentations
JavaScript also provides the facility of creating presentations as a website. JavaScript provides RevealJS and BespokeJS libraries to build a web-based slide deck. Reveal.js creates some of the most beautiful and interactive decks using HTML. A user can easily insert nested slides. Even if the user is not aware of programming language then they can easily build a site with so much help online. These presentations are touch optimized and work great with mobile devices, phones, and tablets. With all this JavaScript also provides different transition styles, themes, and slide backgrounds.

Javascript highlights:

- Data validation functionality

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</head>
<body background bgcolor="fffab9">
<image src="IMG_20200520_221130.jpg" hspace="580" width="150" height="170" title="JavaScrips logo">
<hr>
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</ol>
<h2><font color="6D6D6D">Javascript highlights:</font></h2>
<ul><font color="4D5005" size="4">
<li>Data validation functionality
</li>
<li>Access to several frameworks</li>
<li>Compatible with several programming languages</li>
</font>
</ul>
<ol type="I">
<li><a href="chash.html" target="_blank">C#</a></li>
<li><a href="java.html" target="_blank">java</a></li>
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<li><a href="thepro.html" target="_blank">Main page</a></li>
</ol>
</body>
</html>
```

Links

- **GIThub Links**

  https://github.com/youssefsherifa/ECE001

  (main page)

  https://youssefsherifa.github.io/ECE001/

  (4 Pages)

  https://youssefsherifa.github.io/ECE001/chash.html

  https://youssefsherifa.github.io/ECE001/java.html

  https://youssefsherifa.github.io/ECE001/python.html

  https://youssefsherifa.github.io/ECE001/javascript.html

- file:///C:/Users/Sherif/Desktop/YOUSSEF/Final%20computer%20project/Thepro.html

- file:///C:/Users/Sherif/Desktop/YOUSSEF/Final%20computer%20project/chash.html

- file:///C:/Users/Sherif/Desktop/YOUSSEF/Final%20computer%20project/java.html

- file:///C:/Users/Sherif/Desktop/YOUSSEF/Final%20computer%20project/python.html

- file:///C:/Users/Sherif/Desktop/YOUSSEF/Final%20computer%20project/javascript.html

References

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- https://www.educba.com/uses-of-c-sharp/

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- https://www.cleveroad.com/blog/programming-languages-ranking

- https://www.python.org/about/

- https://www.webopedia.com/TERM/P/programming_language.html

- https://www.hostinger.com/tutorials/best-html-web-fonts