CSE 597: Masters Project

Project Report On: Pricoms: "A Price Comparison Website based on E-Commerce Services"

"A dissertation submitted to the East West University in partial fulfillment of the requirements for the degree of M. S. in Computer Science & Engineering"

Submitted by

Rimon Rahman

ID: 2014-1-96-004

Program: MS-CSE

Supervised by

Dr. Md. Shamim Akhter

Assistant Professor

Dept. of Computer Science & Engineering

East West University

Aftabnagar, Dhaka-1212

January 2016

Declaration

I do hereby solemnly declare that the work presented in this masters project report has been carried out by myself and has not been previously submitted to any other University/College/Organization for an academic qualification/certificate or degree.

I hereby warrant that the work I have presented does not breach any existing copyright.

I further undertake to indemnify the University against any loss or damage arising from breach of the forgoing obligation.

_____
Rimon Rahman
ID: 2014-1-96-004
Program: MS-CSE
East West University

Letter of Acceptance

This is to certify that the Master's project entitled "**Pricoms: A price Comparison website based on e-commerce services**" submitted by Rimon Rahman, ID: 2014-1-96-004 to the Department of Computer Science and Engineering, East West University, Aftabnagar, Dhaka, Bangladesh in partial fulfillment of the requirements for the degree of Master of Science (M.S) has been approved by the Examination Committee as satisfactory.

_____

Dr. Md. Shamim Akhter

Assistant Professor

Dept. of Computer Science & Engineering

East West University

Aftabnagar, Dhaka.

_____

Dr. Shamim Hasnat Ripon

Chairperson & Associate Professor

Dept. of Computer Science & Engineering

East West University

Aftabnagar, Dhaka.

Acknowledgment

I would like to express my deep sense of gratitude and sincere thanks to my honorable supervisor Dr. Md. Shamim Akhter, Assistant Professor, Department of Computer Science and Engineering, East West University, Aftabnagar, Dhaka, Bangladesh for his kind guidance, sharing knowledge and constant inspiration throughout this project work. Without his cooperation it would not be possible for me to complete my project.

I like to express my humble thanks and gratitude to honorable faculty members of the Department of Computer Science and Engineering, East West University for their valuable and constructive suggestions to enrich this research work.

Abstract

E-commerce in Bangladesh is rapidly progressing. Around 250 e-commerce [1] websites are currently active in Bangladesh. Total transaction amount is 100 cr. BDT and expecting more growth in near feature. However, in reality, one new e-commerce website is launching in each day- as there is a lack of regulation and govt. limitation. In such situation, the nefarious businessman is trying to play monopoly with product pricing. The situation becomes bad or even worse when the customer does not get any comparison facilities. Things can be done by manual tracking and it is time- consuming. To assists customer with better pricing detection, development of price comparison tool is inevitable. "Pricoms" is the tool that helps to solve this problem.

Contains

CHAPTER 4   RESULT

CHAPTER 5   CONCLUSION

APPENDICES

List of Figures

CHAPTER 1
INTRODUCTION

1.1 Introduction

Electronic commerce or e-commerce is a kind of trading based on computer networks where customer get their desired product or service using internet. Area of e-commerce includes mobile commerce, Facebook-commerce or f-commerce, electronic funds transfer, online transaction processing, supply chain management, inventory management system, automated data collection systems and etc. With rapid growth of internet subscriber this business model expands with various types and sector.

E-Commerce websites are the online platform and vital place to running the business. Depending on business structure and revenue generation there are five types [2] of E-Commerce website. Vanity Sites, Information Sites, Advertising Sites, Subscription Sites and Storefront Sites are the types.
Again depending of sales scenario there are multiples type [3] of e-commerce website solution exists. They are:-

i. **Business - to - Business (B2B)** Website following B2B business model sells its product to an intermediate buyer who then sells the product to the final customer. As an example, a wholesaler places an order from a company's website and after receiving the consignment, sells the end product to final customer who comes to buy the product at wholesaler's retail outlet.

ii. **Business - to - Consumer (B2C):** Website following B2C business model sells its product directly to a customer. A customer can view products shown on the website of business organization. The customer can choose a product and order the same. Website will send a notification

to the business organization via email and organization will dispatch the product/goods to the customer.

iii. **Consumer - to - Consumer (C2C):** Website following C2C business model helps consumer to sell their assets like residential property, cars, motorcycles etc. or rent a room by publishing their information on the website. Website may or may not charge the consumer for its services. Another consumer may opt to buy the product of the first customer by viewing the post/advertisement on the website.

iv. **Consumer - to - Business (C2B)**: In this model, a consumer approaches website showing multiple business organizations for a particular service. Consumer places an estimate of amount he/she wants to spend for a particular service. For example, comparison of interest rates of personal loan/ car loan provided by various banks via website. Business organization that fulfills the consumer's requirement within specified budget approaches the customer and provides its services.

In Bangladesh E-commerce is quite popular and its popularity is increasing [4]. Tough Bangladesh joined in the IT industry later than many other countries but it gains a lot of internet subscribers in very quick time. From figure-2, over ten month period from Feb-2015 to Nov-2015 County gains 11 million new subscribers. All kind of internet related business is currently flourishing and expected many new kind of business will be launched soon.

Due to Limitation, constraint and govt. policies common types of Bangladeshi E-commerce models are -
 i. Marketplace
    a. B2B

b. B2C

ii. Deals Websites

iii. Online Subscription

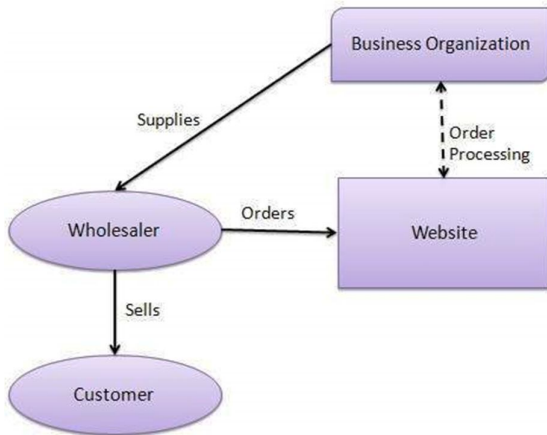iv. Exclusive Brand Store

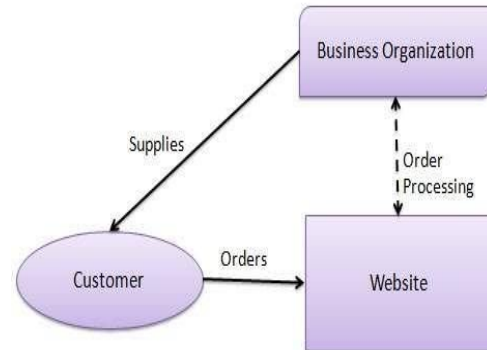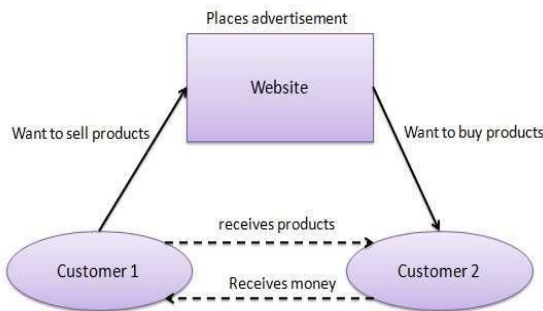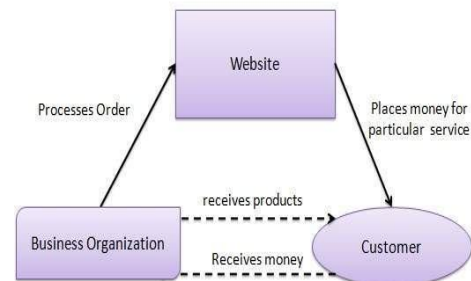Fig-1.1 B2B   Fig-1.2 B2C

Fig-1.3 C2C   Fig-1.4 C2B

Figure-1: E-Commerce Business Model

For sudden rapid growth of internet subscription and easy availability of e-commerce platform many business is forming focusing on this platform. So a big portion of businessman is importing various kinds of products from nearby countries. Depending on their importing cost and various operational cost each businessman has different kind of price for sometimes a single product.

Sometimes they overpriced. Customer has no proper tool to evaluate the actual price of the product. So to solve this problem a price comparison tool is required.
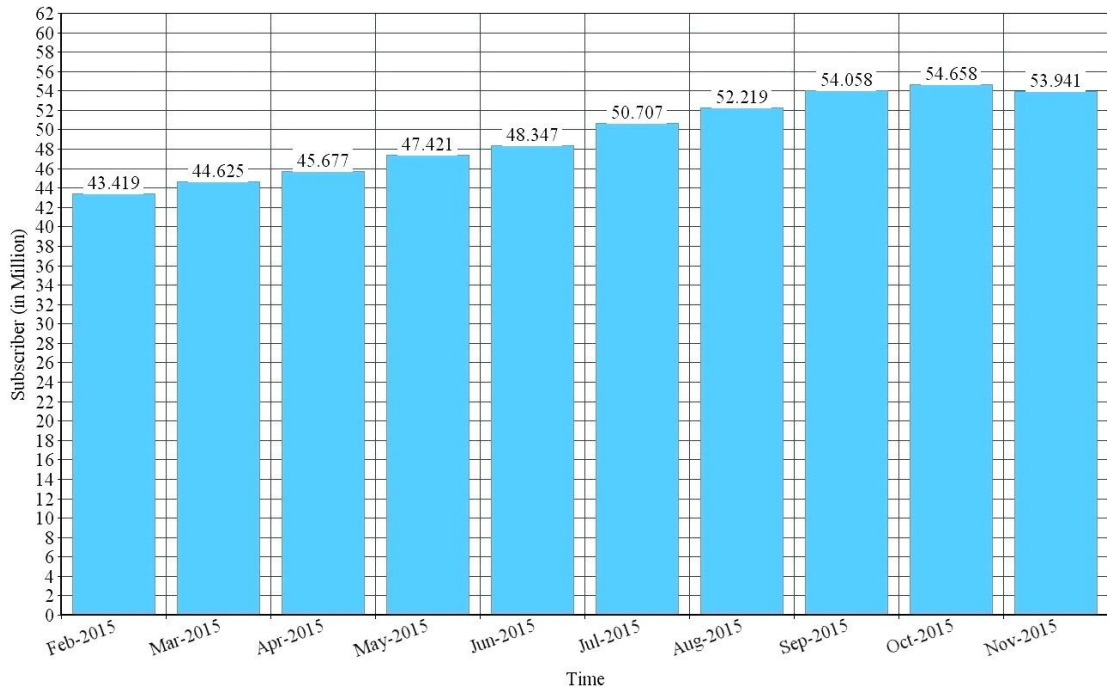

Figure-2: Internet Subscriber of Bangladesh

Figure-3: Popular E-Commerce Sites of Bangladesh

In this research, we have solved this above mentioned problem.

In chapter two we be provide an analyzed the problem specification, discovered the possible solution strategy and technical analysis.

In chapter three will provide diagrams and models. Different types of diagrams will be present here.

In chapter four will provide the outcome of our project. Advantages and disadvantages, drawbacks of our application will be discussed here.

In chapter five we will conclude our journey pointing out the future work space.

CHAPTER 2
ANALYSIS

2.1. Problem

In Bangladesh, the main problem is that the product database. Various vendors sells various kind of products. In terms of website publishing same products has been posted with various names. Reason for this naming is human read friendliness. Most of the imported product has unique Bar Code and registered names. But this information never gets published in the websites it required for machines not human. There is no govt. service to look after the product information. Also there are no third party vendors who do the directory listing of the product database. So each time product price comparing problem occurs around the world somebody has to start from the scratch to build a product database first and reinvent the wheel.

Second problem is the product pricing. In e-commerce industry product pricing depends on these factors

- Market Oriented Pricing
- Consumer Oriented Pricing
- Takeaway

Vendors change their products price according to their business plan. There is a pattern for such pricing; newcomer vendors chose high prices while old vendors keep the product prices marginal. New vendors ensure quality and old vendors ensure market availability of the product. Sometimes old companies provide commissions to win the competition of business-field. In terms of customer view there is a option to gain some benefits from this competition. To model such situation in application, system should remain updated. Conditional product pricing is one of the hard kinds to model because it require to handle dynamic situations. Frequency of product information update is uncertain, so with a heavy expense system must ensure the database process is running. Though many

e-commerce websites provides API for product information but the culture in Bangladesh is still missing. So manual web-page scraping is the only possible option to get product information.

Third problem is privacy protection. Many websites never get permission to scrape their product information for scraping bot. Also it is against the copyright law.

2.2. Existing Solution

Above mention problem directly relates the type of problem is vertical search engine problem, where visitor can search product based on name, price, feature and other criteria where product information is collected from various websites and system never sold any product.

Such system is popular in developed countries. BargainFinder[5] is the first implementation of this kind and implemented in 1995 as an experiment. Jango[5] is the first commercial shopping agent. pricewatch.com and killerapp.com was the early kind of application and did not gain much public attention.

In 2006, finder.com.au (Australia) and finder.com (United States) were two price comparison websites founded with the emerging markets. In 2010, South-East Asia became a burgeoning region for many comparison website. CompareExpress (Singapore) is founded this year and 2011 Baoxian (China) and AskHanuman (Thailand) founded. Pricena.com[5] is also seeing its fair share of a burgeoning e-commerce ecosystem in Middle East.

In 2013, data-driven price comparison sites was growing, and several venture capital firms made large investments in price comparison sites with big-data

oriented platforms, including FindTheBest[5], Askhanuman[5], Priceza and the Singaporean Price Comparison startup "Save 22"[5].

2.2.1. Technology
Price comparison site

Existing price comparison sites collect data from merchants. Interested retailers provide content to the websites. System checks the data with its own database. This process is done by information extraction, fuzzy logic and human labor.

Another way of data collection is data feed file. Merchants provide information in a set format. Then the data is imported to the system. This kind of data feed file can be found from third party company. Affiliate networks such as Commission Junction[5], LinkShare[5] or TradeDoubler[5] aggregate data feeds from many merchants and provide them to the price comparison sites. This enables price comparison site to monetize the products contained in the feeds by earning commissions on click through traffic. Other price comparison sites like PraceGrabber[5] have deals with merchants and aggregate feeds using their own technology.

Another approach is to crawl the web for prices. This means the comparison service scans retail web pages to retrieve the prices, instead of relying on the retailers to supply them. This method is also sometimes called 'scraping' information. Some, mostly smaller, independent sites solely use this method, to get prices directly from the websites that it is using for the comparison.

Yet another approach is to collect data is through crowdsourcing [5]. This lets the price comparison engine collect data from almost any source without the complexities of building a crawler or the logistics of setting up data feeds at the expense of lower coverage comprehensiveness. Sites that use this method rely

on visitors contributing pricing data. Unlike discussion forums, which also collect visitor input, price comparison sites that use this method combine data with related inputs and add it to the main database through collaborative filtering, artificial intelligence, or human labor.-[Wikipedia]

2.2.2. Functionality & Performance

There are two technologies in Shopping Search Comparison (SSC) technique. These are page-wise search and site-wise search.

In page-wise search a phrase, such as a product name, is searched over an index of pages. When the phrase is found, the URLs of the pages in which the phrase was found are returned to the user in the user's browser along with pictures of the products found.

In site-wise search, several product names are searched not over an index of pages, but over an index of sites. To perform a site-wise search the SSC engine must search all pages in every site in its index and return the sites that have pages where one of the several product names occurs. Site-wise search is more computer-intensive because multiple products are searched over multiple pages on multiple sites. The result, although costly in terms of computing power, is that a list of products may be searched and found at a single website – for example at an online merchant.-[Wikipedia]

2.3. Proposed Solution

To solve the proposed problem, there are limited available options. A product database will be created from various vendor websites. A preselected websites link will be used as product webpages. The entire product will be scraped via cron job. Product title will be divided into different tags. Each new products tag will be checked with others products tags. If more than threshold amount similarity found in a check then two products will belongs to same base product.

Or it will be considered as unique product. Each unique product will be a base product. When a visitor visit the website and search any product then the base product will be used. To remain the product info updated a cron job will be used.

2.3.1 Required Technology

To implement the proposed application we need to develop a system where visitor can easily get the product information. Web application is the best fit for such objectives. Primarily we will create an online application, and then in later stage we will add a mobile application. In web application eco system we will use LAMP stack. It means we will use Linux, Apache, MySQL, and PHP.

2.3.1.1 Linux

For development simplicity and high availability we will use Linux based Operating system. Current Linux based Ubuntu LTS version is 14.04. We will use it. We will design a system that will run in minimum configuration and resource.

2.3.1.2 Programing Language - PHP – Python.

PHP or Hypertext Preprocessor is a server-side scripting language for web development. It is also used a general-purpose programming language. In recent update to its version PHP 7 it achieved some remarkable improvements.

2.3.1.3 Laravel

To faster the development workflow we will use a PHP framework to develop our application. Current best and most popular Open Source PHP framework is Laravel. This framework includes tons of features.

Among them few features are,

1. Eloquent ORM (object-relational mapping).
2. Query builder and caching

3. Application Login Builder in route declaration or controller

4. Reverse routing

5. Restful controllers

6. Class auto loading

7. Blade Template Engine

8. IoC containers

9. Version Control for database Schema and Seed Database

10. Unit Testing

11. Automatic Pagination

12. Lots of Helper functions

13. Bundles provide a modular packaging system. With composer it provides an easy way to include framework agnostic other open source packages.

2.3.2 Database

For our initial development we will use MySQL database system.

2.3.3 Data Collection

To collect the data we will follow two methods. One is manual method or human driven method another is automatic method.

Steps of human driven methods

1. Select the websites

2. select the potential URLs

3. scrape the URLs

4. process the data and generate tags

5. create CSV output file

6. upload the CSV file to the main system

7. repeat from step 2

Steps of automatic methods

1. Select the websites
2. Select URLs links
3. set corn job to scrape the links

2.3.4. Update of Data

Update of product price could be done via three ways. It could be done in human driven method or automatic methods. Third way is real-time update. Website visitor can see the real time product updated price from website.

CHAPTER 3
IMPLEMENTATION

3.1 System Architecture

System architecture is something like below diagram –
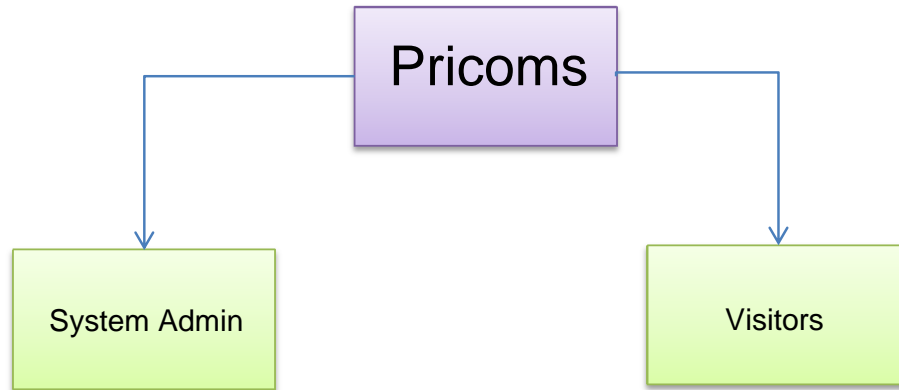
Figure-4: Pricoms Systems Architecture

System has three major parts, website itself, is the main portion, where the all visitor will come and visit for their product, It's another portion is administration area. When admin can update product content and add new products.

3.2 Project Initiation and Planning:

Before starting the project development a market research has done. All the popular e-commerce websites list was generated, also finds out the common pattern of the product listings and products displays. Also checks the products URL patterns. Also for demo purpose few websites reconstruct from the actual websites. After that project organization was done.

3.3 Project Organization:
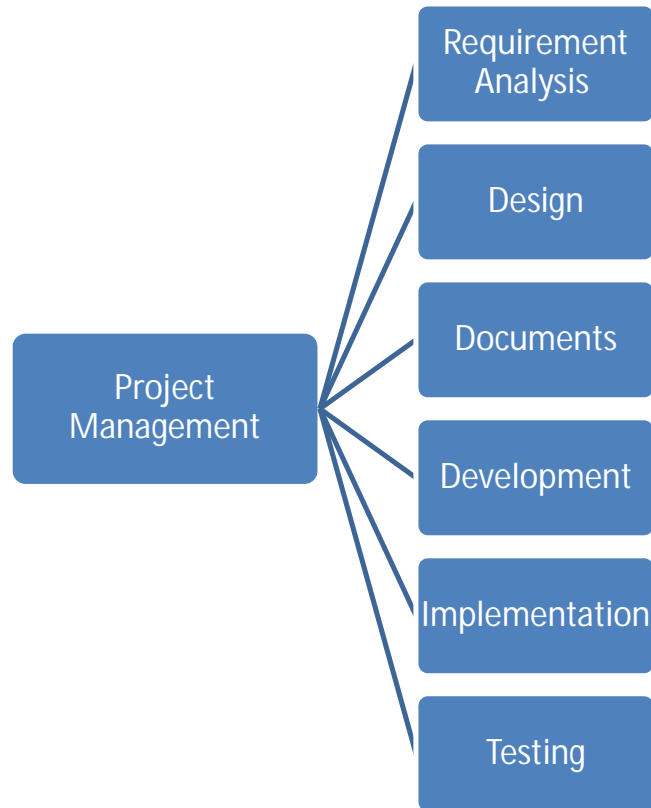
Figure-5: Project Organization

3.4: Development Methodology

This system development process follows a number of standard or company specific frameworks, methodologies, modeling tools and languages. The Software development life cycle comes with some standards which fulfill the needs of any development team. Like software, web sites are also be developed with certain methods with some changes and additions with the existing software development process. Let us see the steps that we follow in web application development.
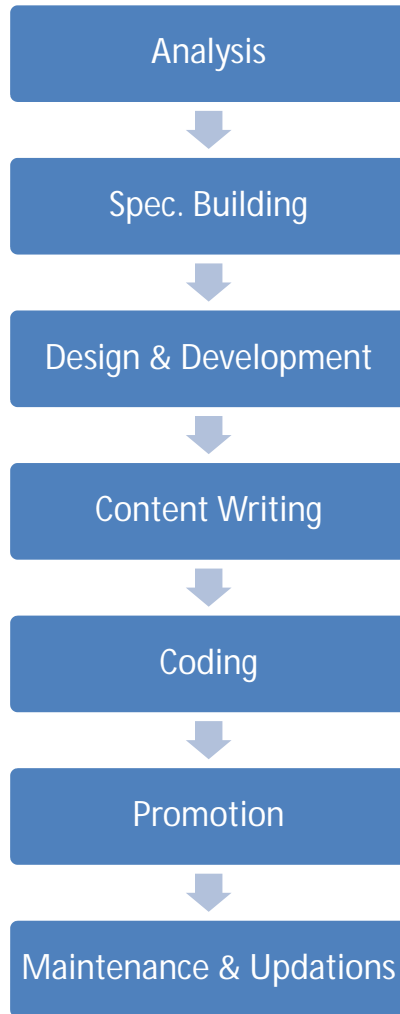
Figure-6: DFD for development Methodology

3.5: Technology

The site will build based on using the PHP5, which will make the site very flexible and easy to add new advanced features in the long run and it will also ensure the security of the application. The data will be stored in the MySQL database. Project will be followed MVC Design pattern and Database ORM System.

3.5.1: Package for DOM Parsing: Simple HTML DOM

Technology for real-time price check is PHP Simple HTML DOM Parser [6] Benefits of it is –

     i. A HTML DOM parser written in PHP5+

    ii. Supports Invalid HTML

    iii. Find tags on an HTML page with selectors just like jQuery

15

iv. Extract contents from HTML in a single line.

For simplicity we have used the Laravel version [7] of Simple HTML Dom parser. Behind the scene it uses URL to get the website content, and a wrapper class maps the page as object. Example Snippet of this package is -

```php
$html = new \Htmldom('http://www.example.com');

// Find all images
foreach($html->find('img') as $element)
        echo $element->src . '<br>';

// Find all links
foreach($html->find('a') as $element)
        echo $element->href . '<br>';
```

3.5.2: Package for Search: Searchable

System initial plan is to develop an easy interface to provide search feature based on product name string.

```php
use Nicolaslopezj\Searchable\SearchableTrait;

class User extends \Eloquent
{
    use SearchableTrait;

    /**
     * Searchable rules.
     *
     * @var array
     */
    protected $searchable = [
        'columns' => [
            'first_name' => 10,
            'last_name' => 10,
            'bio' => 2,
            'email' => 5,
        ],
    ];

}
```

MySQL full text search mechanism is the best fit for our system. This Laravel package [8] builds a query that search through your model using Laravel's Eloquent.

Search:

```
$search = User::search('Sed neque labore', null, true)->get();
```

```sql
select `users`.*,
-- If third parameter is set as true, it will check if the column starts with the
search
-- if then it adds relevance * 30
-- this ensures that relevant results will be at top
(case when first_name LIKE 'Sed neque labore%' then 300 else 0 end) +

-- For each column you specify makes 3 "ifs" containing
-- each word of the search input and adds relevace to
-- the row

-- The first checks if the column is equal to the word,
-- if then it adds relevance * 15
(case when first_name LIKE 'Sed' || first_name LIKE 'neque' || first_name
LIKE 'labore' then 150 else 0 end) +

-- The second checks if the column starts with the word,
-- if then it adds relevance * 5
(case when first_name LIKE 'Sed%' || first_name LIKE 'neque%' || first_name
LIKE 'labore%' then 50 else 0 end) +

-- The third checks if the column contains the word,
-- if then it adds relevance * 1
(case when first_name LIKE '%Sed%' || first_name LIKE '%neque%' ||
first_name LIKE '%labore%' then 10 else 0 end) +

-- Repeats with each column
(case when last_name LIKE 'Sed' || last_name LIKE 'neque' || last_name LIKE
'labore' then 150 else 0 end) +
(case when last_name LIKE 'Sed%' || last_name LIKE 'neque%' || last_name
LIKE 'labore%' then 50 else 0 end) +
(case when last_name LIKE '%Sed%' || last_name LIKE '%neque%' ||
last_name LIKE '%labore%' then 10 else 0 end) +
```

```
(case when bio LIKE 'Sed' || bio LIKE 'neque' || bio LIKE 'labore' then 30 else
0 end) +
(case when bio LIKE 'Sed%' || bio LIKE 'neque%' || bio LIKE 'labore%' then
10 else 0 end) +
(case when bio LIKE '%Sed%' || bio LIKE '%neque%' || bio LIKE '%labore%'
then 2 else 0 end) +

(case when email LIKE 'Sed' || email LIKE 'neque' || email LIKE 'labore' then
75 else 0 end) +
(case when email LIKE 'Sed%' || email LIKE 'neque%' || email LIKE 'labore%'
then 25 else 0 end) +
(case when email LIKE '%Sed%' || email LIKE '%neque%' || email LIKE
'%labore%' then 5 else 0 end)

as relevance
from `users`
group by `id`

-- Selects only the rows that have more than
-- the sum of all attributes relevances and divided by 4
-- Ej: (20 + 5 + 2) / 4 = 6.75
having relevance > 6.75

-- Orders the results by relevance
order by `relevance` desc
```

3.5.3: Tool for Offline Data Collection: Scrapy[9]

"An open source and collaborative framework for extracting the data you need from websites in a fast, simple, yet extensible way." –Scrapy

Scrapy is a full framework for web crawling which has the tools to manage every stage of a web crawl, just to name a few:

 1. Requests manager - which basically is in charge of downloading pages and the great bit about it is that it does it all concurrently behind the scenes, so one get the speeds of concurrency without needing to invest a lot of time in concurrent architecture.
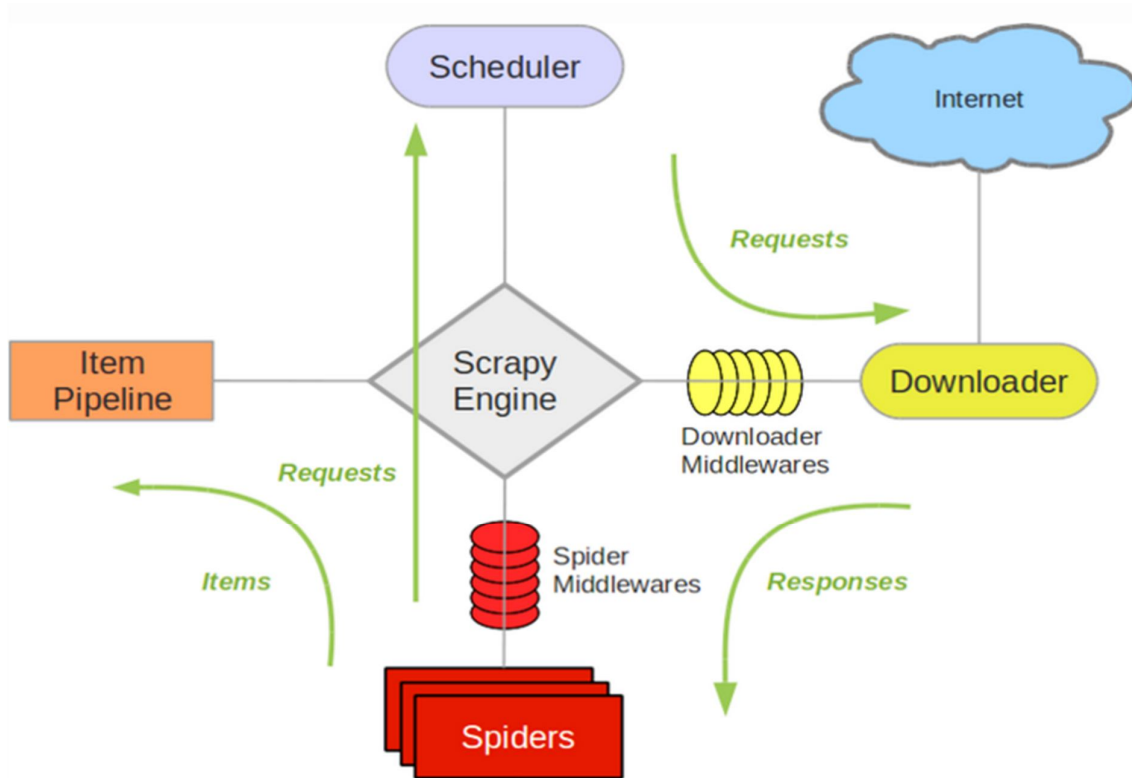
Figure – 7 System Architecture of Scrapy

2. Selectors - which is used to parse the html document to find the bits one need. Beautiful Soup does exact same thing, one can use it instead of scrapy Selectors if you prefer it.

3. Pipelines - Once you retrieve the data you can pass the data through various pipelines which are basically bunch of functions to modify the data.

3.5.3.1 Data flow of Scrapy

The data flow in Scrapy is controlled by the execution engine, and goes like this:

1. The Engine opens a domain, locates the Spider that handles that domain, and asks the spider for the first URLs to crawl.

2. The Engine gets the first URLs to crawl from the Spider and schedules them in the Scheduler, as Requests.

3. The Engine asks the Scheduler for the next URLs to crawl.

4. The Scheduler returns the next URLs to crawl to the Engine and the Engine sends them to the Downloader, passing through the Downloader Middleware (request direction).

5. Once the page finishes downloading the Downloader generates a Response (with that page) and sends it to the Engine, passing through the Downloader Middleware (response direction).

6. The Engine receives the Response from the Downloader and sends it to the Spider for processing, passing through the Spider Middleware (input direction).

7. The Spider processes the Response and returns scraped items and new Requests (to follow) to the Engine.

8. The Engine sends scraped items (returned by the Spider) to the Item Pipeline and Requests (returned by spider) to the Scheduler

9. The process repeats (from step -ii) until there are no more requests from the Scheduler, and the Engine closes the domain.

3.5.4: Tool For Chart: CHARTIST.JS

Benefits of chartist.js –

- Simple responsive Chart
- Less than 10KB size & Usage of SVG
- Simple handling while using convention over configuration
- Great flexibility while using clear separation of concerns
- Responsive configuration with media queries
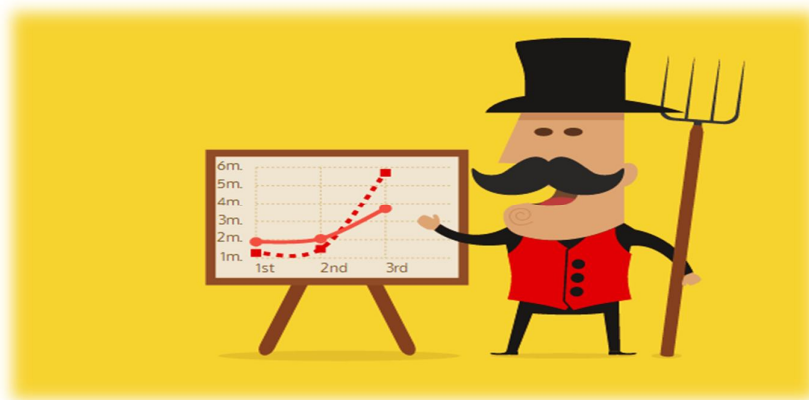
Figure-8: Chartist.js

3.6 Screen Shots

3.6.1 Home Screen

Pricoms

| Home |
| Electronics |
| Popular Brand |

Search

Search on Title ▼   Search Query   SEARCH!

Latest Products

HP 15-AC010TU CDC N3050, Black
24700.00TK

Lenovo G5080 Intel Core i7 5th Gen. 5500U, Silver
60200.00TK

Lenovo G4080 Intel Core i7 5th Gen. 5500U, Black
59700.00TK

Lenovo Yoga 500 Intel Core i3 5th Gen. 5010U, Silver (Win 8.1)
55700.00TK

Lenovo Yoga 500 Intel Core i3 5th Gen. 5010U
55700.00TK

Lenovo Flex2-14 Core i3 4th Gen.4030U, Silver (Win-8)
51700.00TK

Popular Tags

- Core I5(109)
- Core I3(69)
- Acer Aspire(66)
- Dell Inspiron(39)
- Hp Pavilion(20)
- Hp Probook(14)
- Acer Travelmate(8)
- Apple Macbook(4)
- Lenovo Yoga(2)
- Samsung Galaxy(1)

Companies

- HP
- Acer
- Asus
- Dell
- Intel
- Lenovo
- Canon
- Microlab
- Samsung
- Nikon
- Havit
- Twinmos
- Epson
- Sony
- Fujitsu
- Apple
- Brother
- Genius

Popular Products

Dell Inspiron N3442 Intel CDC C2957
36500.00TK

Acer Aspire E5-474 Core i5 6200U, Yellow
45500.00TK

Acer Aspire F5-572-588T Core i5 6th Gen. 6200U, Black
66500.00TK

Asus X453SA Intel Pentium Quad Core N3700, Black
29000.00TK

Asus K555LF Core i7 5th Gen. 5500U, Black Metal
63700.00TK

Dell Inspiron N3148 Core i3 4th Gen. 4030U, Silver
50700.00TK

Dell Inspiron N7447 Core i5 4th Gen. 4200H, Black
70700.00TK

HP 14-R042TU Core i3 4Th Gen. 4030U, Black
33700.00TK

HP Pavilion 15-AB041TU Core i3 5th Gen. 5010U, Silver
38200.00TK

HP Pavilion 15-AB030TU Core i5 5th Gen. 5200U, Silver
46200.00TK

Lenovo Yoga 500 Intel Core i3 5th Gen. 5010U, Silver (Win 8.1)
55700.00TK

Lenovo G4080 Intel Core i7 5th Gen. 5500U, Black
59700.00TK

Prices, rankings, delivery times and delivery costs may be subject to interim changes.

2015 © Company | PRIVACY POLICY | TERMS OF USE | ABOUT US | CONTACT US

3.6.2. Product Screen

3.6.3. Price History Screen

3.6.4 Real Time Price Checking Update

Pricoms

Home » Product » Apple Macbook Air (MJVP2ZA/A) i5 5th Gen.

Home
Electronics
Popular Brand

Products

Apple Macbook Air (MJVP2ZA/A) i5 5th Gen.

Price: **99000.00TK**

Comparison Chart

Vendor	Title	Price	Late Update	Action
Demo Company 1	Apple Macbook Air (MJVP2ZA/A) i5 5th Gen.	99000.00 Tk	7 minutes ago	HISTORY
Demo Company 2	Apple Macbook Air (MJVP2ZA/A) i5 5th Gen.	99000.00 Tk	7 minutes ago	HISTORY
Demo Company 3	Apple Macbook Air (MJVP2ZA/A) i5 5th Gen.	99000.00 Tk	7 minutes ago	HISTORY
Ryans Computer	Apple Macbook Air (MJVP2ZA/A) i5 5th Gen.	100000.00 Tk	36 minutes ago	HISTORY

*Prices, rankings, delivery times and delivery costs may be subject to interim changes.

2015 © Company | PRIVACY POLICY | TERMS OF USE | ABOUT US | CONTACT US

3.6.6.1 Admin Panel

Pricoms

Login to your account

admin@abc.com

••••••••

Remember me   Login ⊕

2015 © Pricoms | All rights reserverd.

23

3.6.6.2 Admin Profile

3.6.7 Vendors website List

3.6.8 New Vendor Create

3.6.9. Edit Vendor Information

3.6.10 Base Product List

3.6.11. Base Product Edit

3.6.12. New Base Product Add

Pricoms   Dashboard   Pricoms ⌄   Rimon Rahman ⌄

            My Profile

            Log Out

Add new base Product

⌂ Home / ◉ Products / ◉ Add new Base product

◉ Provide Product Information   ⌄

Title of product	Product Title
Price	Price
Description	
Tags	
	Use comma for seperation.
Image	Choose File No file chosen

Add New Base Product

Upload CSV file of Base Product Information   ⌄

Download Base Product List ⬇

Upload CSV File	Choose File No file chosen

Upload Products CSV File

2015 © Pricoms.

3.6.13 Vendor Product List

Pricoms   Dashboard   Pricoms ⌄   Rimon Rahman ⌄

Vendors Details

⌂ Home / ◉ Vendors

Vendor Details   ⌄

Ryans Computer

Website: Ryans Computer
facebook: Facebook
This is description about company.

Upload Product Information✚

10 ▾ records   Search: [   ]

SL	Name	price / Unit	Last Update	Action
1	Acer Aspire ES1-111 Intel Celeron Dual Core N2840 , Black	21200.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
2	Acer Aspire E3-112 Celeron Dual Core N2840, Pink	21700.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
3	Acer Aspire E3-112 Celeron Dual Core N2840 Blue	21700.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
4	Acer Aspire E3-112 Celeron Dual Core N2840 Brown	21700.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
5	Acer Aspire E3-112M CDC N2840 (Win-8.1 Pink	21900.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
6	Acer Aspire E3-112 Celeron Quad Core N2940, Pink	22700.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
7	Acer Aspire ES1-311 Intel Celeron Quad Core N2940 , Black	23700.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
8	Acer Aspire ES1-431 Intel Celeron Dual Core N3050, Black	24000.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
9	Acer Aspire E3-112 Pentium Quad Core N3540, Pink	24200.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price
10	Acer Aspire ES1-411 Intel Celeron Quad Core N2940, Black	24200.00	28-12-2015 12:00	🗑 ☑ 🔍 ☑ Update Price

Showing 1 to 10 of 250 entries   ‹ 1 2 3 4 5 … 25 ›

« 1 2 »

2015 © Pricoms.

3.6.14 Vendor Product Details

Pricoms   Dashboard   Pricoms ⌄   👤 Rimon Rahman ⌄

Details of Vendor Product

🏠 Home / ✔ Ryans Computer / ✔ Details of Vendor Product

Products

Acer Aspire ES1-111 Intel Celeron Dual Core N2840 , Black

Price: **21200.00TK**

Vendor Details

Name: Ryans Computer

This is description about company.

Website: http://www.ryanscomputers.com/
Facebook Page Ryans Computer

Name	Acer Aspire ES1-111 Intel Celeron Dual Core N2840 , Black
Unit	
Price	21200.00
Coupon Discount	
Link	http://www.ryanscomputers.com/Acer-Aspire-5958

Histories

Date	Price
28-12-2015 07:35	21200.00
28-12-2015 08:00	21200.00
28-12-2015 08:35	21200.00
28-12-2015 09:00	21200.00
28-12-2015 09:35	21200.00
28-12-2015 10:00	21200.00
28-12-2015 10:35	21200.00
28-12-2015 11:00	21200.00
28-12-2015 11:35	21200.00
28-12-2015 12:00	21200.00

Product Price History in Graph

2015 © Pricoms.

28

CHAPTER 4
RESULT

4.1 Result

The project includes a corn job which helps to scrape sites in a regular interval. Initially for 3 demo websites are created with some product details. Later a live website is included to scrape product data information. On each iteration of the scraping, the system check the URL is already exists in the system or not. If it is found then system updates the price, if not found, system checks for a similar product. To do so, each time system gets a new product and generates Base product information. While the system is adding the new base product, it generates tags from product title. Then system compares with other product tags. If two products haves more than eighty percent similarity it is considered as a similar product. Each vendor product belongs to one base product. All the products (vendors) of a base product will be listed in a page and customer can easily check the price.

There are some predefined tags listed in the page. The visitors can use this list to find their products.

Current search works on product title and helps to return the product with more relevant of the search query in terms of string matching.

CHAPTER 5
CONCLUSION

5.1 Conclusion

The proposed implementation helps visitors to compare the price of similar products (may have a small precision error) from various websites. Customer interaction with the system is very limited. However, the system contains few drawbacks, and needs new features to be added.

To improve our application efficiency, different parameters with product information can be added. Example: various offers, discounts, packages information. In addition, a can be added, review system. Natural Language Processing (NLP) technique can be applied to help the customer to determine better products. Location based result could be a key element of efficiency. The better search result, minimizing scraping time, the inclusion of Facebook commerce pages, maintaining a better product list is also very important. Optimizing server load, implementation of cache, distribution of data among various server, shifting SQL based database to NoSql based database, mobile apps for user interacts will be implemented as future works.

APPENDICES

Appendices

Appendix A: Acronyms

E-Commerce	Electronic Commerce
B2B	Business - to - Business
API	Application Program Interface

Appendix B: Popular E-Commerce Websites of Bangladesh

http://daraz.com.bd/
http://www.24haat.com
http://www.aarong.com
http://www.ajkerdeal.com
http://www.akhoni.com
http://www.aponzone.com
http://www.bangladeshbrands.com
http://www.banglashoppers.com
http://www.bdbazar24.com
http://www.bdgift.com
http://www.bdhaat.com
http://www.bdonlinemart.com
http://www.bdstore24.com
http://www.bikroy.com
http://www.chaldal.com
http://www.clickbd.com
http://www.ekhanei.com
http://www.fortunabangladesh.com
http://www.hotofferbd.com
http://www.iferi.com
http://www.jemonkhushi.com
http://www.kaymu.com.bd
http://www.nittodin.com
http://www.priyoshop.com
http://www.proyojonestore.com
http://www.rang-bd.com
http://www.ryanscomputers.com/
http://www.samogree.com
http://www.shop24.com.bd
http://www.shopping24bd.com

Appendix C: Terms and Terminology

1. Vertical Search:

A vertical search engine, as distinct from a general web search engine, focuses on a specific segment of online content. They are also called specialty or topical search engines. The vertical content area may be based on topicality, media type, or genre of content. Common verticals include shopping, the automotive industry, legal information, medical information, scholarly literature, and travel. Examples of vertical search engines include; Mocavo, Nuroa, Trulia and Yelp. In contrast to general web search engines, which attempt to index large portions of the World Wide Web using a web crawler, vertical search engines typically use a focused crawler which attempts to index only relevant web pages to a pre-defined topic or set of topics.

Some vertical search sites focus on individual verticals, while other sites include multiple vertical searches within one search engine.

Vertical search offers several potential benefits over general search engines:

- Greater precision due to limited scope,
- Leverage domain knowledge including taxonomies and ontologies,
- Support of specific unique user tasks.

Vertical search can be viewed as similar to enterprise search where the domain of focus is the enterprise, such as a company, government or other organization. In 2013, consumer price comparison websites with integrated vertical search engines such as FindTheBest drew large rounds of venture capital funding, indicating a growth trend for these applications of vertical search technology.

Link: https://en.wikipedia.org/wiki/Vertical_search

2. Model View Controller – MVC

Model view Controller is a classical design pattern used in applications that needs a clean separation between their business logic and views that represents data. MVC design pattern isolates the application logic from the user interface and permitted the individual development, testing and maintenance for each component. This design pattern is divided into three parts.

a. Model – This component manages the information and notify the observers when the information changes. It represents the data when on which the application operates. The model provides the persistent storage of data, which manipulated by the controller.

b. View – The view displays the data, and also takes input form user. It renders the model data info a form to display to the user. There can be several view associated with a single model. It is actually representation of model data.
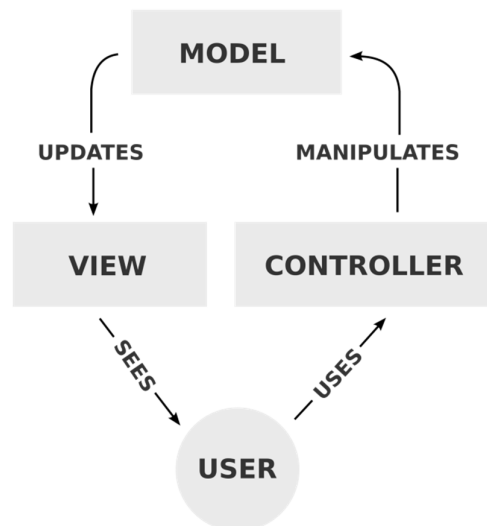
c. Controller – The controller handles all requests coming from the view or user interface. The data flow to whole application is controlled by controller. It forwarded the request to the appropriate handler. Only the controller is responsible for accessing model and rendering it into various UIs.

3. Object-Relational Mapping (ORM):

In development there is a programming technique for converting data between incompatible type systems in object oriented programming languages. This creates, in effect, a "virtual object database" that can be used from within the programming language.

In addition to the data access technique, ORM's benefits also include:

1. Simplified development because it automates object-to-table and table-to-object conversation, resulting in lower development and maintenance costs.
2. Less code compared to embedded SQL and handwritten stored procedures.
3. Transparent object caching in the application tier, improving system performance
4. An optimized solution making an application faster and easier to maintain
5. Concurrency support. Support for multiple users updating the same data simultaneously.
6. Cache management. Entities are cached in memory thereby reducing load on the database

ORM's emergence in multiple application development has created disagreement among experts. Key concerns are that ORM does not perform well and that stored procedures might be a better solution. In addition, ORM dependence may result in poorly-designed databases in certain circumstances.

4. Interactive Website

Across the many fields concerned with interactivity, including information science, computer science, human-computer interaction, communication and industrial design, there is little agreement over the meaning of the term interactivity, although all are related to interaction with computers and other machines with a user interface.

Multiple views on interactivity exist. In the "contingency view" of interactivity, there are three levels:

1. No interactive, when a message is not related to previous messages;

2. Reactive, when a message is related only on one immediately previous message and

3. Interactive, when a message is related to a number of previous messages and to the relationship between them.

In computing science the term "look and feel" is often used to refer to the specifics of a computer system's user interface. Using this metaphor, the "look" refers to its visual design, while the "feel" refers to its interactivity. Indirectly this can be regarded as an informal definition of interactivity.

In computer science, interactive computing refers to software which accepts input from humans – for example, data or commands. Interactive software includes most popular programs, such as word processors or spreadsheet applications. By comparison, no interactive programs operate without human contact; examples of these include compilers and batch processing applications. If the response is complex enough it is said that the system is conducting social interaction and some systems try to achieve this through the implementation of social interfaces.

The nature of interactive computing as well as its impact on humans is studies extensively in the field of Human-computer interactive.

Interactive websites contain elements that attempt to engage a business site's visitors by encouraging or even requiring their participation. This can range from simple HTML input fields or forms to very rich content including games, maps and other advanced programming elements such as Flash, Java or HTML5. Building interactive websites requires some amount of programming knowledge. Use templates or rapid development applications if your programming skills are limited or if you're short of time or you can develop your website from scratch using a development suite. Alternatively, one can add interactive modules to a basic website.

REFEREANCES

References

[1]   Title: VAT on e-commerce draws flak from business leaders
        Link: http://www.thedailystar.net/business/vat-e-commerce-draws-
        flak-business-leaders-98683
        Last Access: Dec 27, 2015

[2]   Title: The Five Business Models of E-Commerce
        Link: https://www.clickz.com/clickz/column/1718210/the-five-
        business-models-e-commerce
        Last Access: Dec 27, 2015

[3]   Title: E-Commerce - Business Models
        Link:
        http://www.tutorialspoint.com/e_commerce/e_commerce_business_m
        odels.htm
        Last Access: Dec 27, 2015

[4]   Title: E-Commerce in Bangladesh History of E-commerce in
        Bangladesh
        Link: http://ecombd.net/2014/08/history-of-e-commerce-in-
        bangladesh/
        Last Access: Dec 27, 2015

[5]   Title: Comparison Shopping Website
        Link: https://en.wikipedia.org/wiki/Comparison_shopping_website
        Last Access: Dec 29, 2015

[6]   Title: Simple HTML DOM
        Link: http://simplehtmldom.sourceforge.net/
        Last Access: Dec 30, 2015

[7]   Laravel package
        Link: https://github.com/yangqi/Htmldom
        Last Access: Dec 30, 2015

[8]   Laravel Package
        Link: https://github.com/nicolaslopezj/searchable
        Last Access: Dec 30, 2015

[9]   Title: Scrapy
        Link: http://scrapy.org/
        Last Access:Dec 30, 2015

[10]   Title: Chatist.JS
        Link: https://gionkunz.github.io/chartist-js/
        Last Access: Dec 30, 2015