# **MSc Web and Social Media Analytics**

# Tutorial Pack 4 (90 minutes)

(To be completed during LW4 tutorial)

# **LEARNING OBJECTIVES**

- To understand the basic principles of HTML.
- Understand how various HTML tags are used to structure web pages.
- To develop a working knowledge of common SEO practices.

### **LEARNING OUTCOMES**

- By the end of this tutorial students will have;
  - o Implemented a basic HTML webpage using CSS and common tags
  - o Practiced using some SEO techniques.
  - o Performed keyboard research.

### **RESOUCRES AND TOOLS REQUIRED**

- Internet Browser
  - To test your developed web pages
  - Google Chrome/Firefox etc.
- HTML Editor
  - Notepad, or.
  - o Adobe Dreamweaver
  - KompoZer (open source)
  - TextMate (on Mac)

# 1) HTML

### 1.1. Introduction

In this tutorial we will explore how webpages are developed. While this module is not about web design per se, it is important that as a web analyst you understand the basic principles of implementing changes to a website to improve one or more of its web metrics or conduct search engine optimisation.

**NOTE:** As a student at the University of Westminster you can create websites using Google Sites that are either **public or private to all or some selected students from the my.westminster.ac.uk domain.** Google Sites is a graphical WYSIWYG (What you see is what you get) web editor and compared with some other website hosting services, will not allow full manual control of the HTML generated. For an overview of Google Sites, you should check the extension exercises for this week.

### 1.2. The basics of HTML

HTML is a mark-up language used to create web pages and define their content. Recall that web sites are made up of multiple HTML documents that are linked together. When web pages on the internet are opened, your browser will read the HTML syntax and decide what to present on the screen according to the syntax used.

HTML has been around for a long time and the most recent version is version 5. The basic structure of all HTML web pages is shown below.

```
<html>
<head>
<title>Page Title</title>
</head>
<body>
<h1> Heading 1 </h1>
Paragraph 
</body>
</html>
```

marks (chevrons) i.e. < and > so that they are not confused with the same words present on the page.

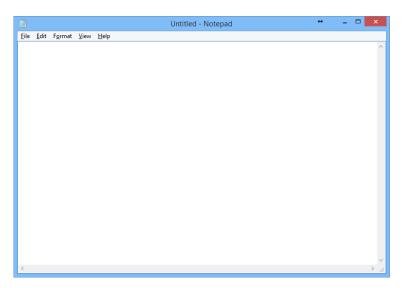
Many tags consist of two parts, i.e. <body> and <html>, an opening and a closing part. For example, <html> is the opening tag and </html> is the closing tag. Note that the closing tag has the same text as the opening tag, but has an additional forward-slash ( / ) character. The purpose of the opening and closing tag is to help the browser understand where certain formatting should be applied. For example, <h1> tells the browser that the heading is about to begin and </h1> marks the end of the heading.

# 1.3. Creating HTML pages

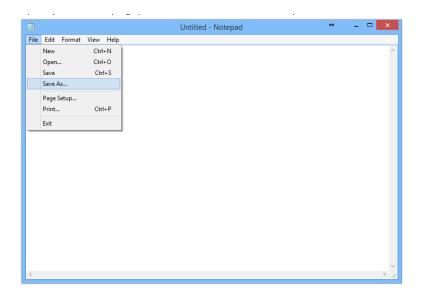
HTML pages can be created and edited in a variety of ways, including using simple text editors and Graphical WYSIWUG (What you see is what you get) tools. One of the most powerful and feature rich software packages for web development is Adobe Dreamweaver. For the purpose of this simple example, I am going to use Notepad

# 1.3.1. Using Notepad

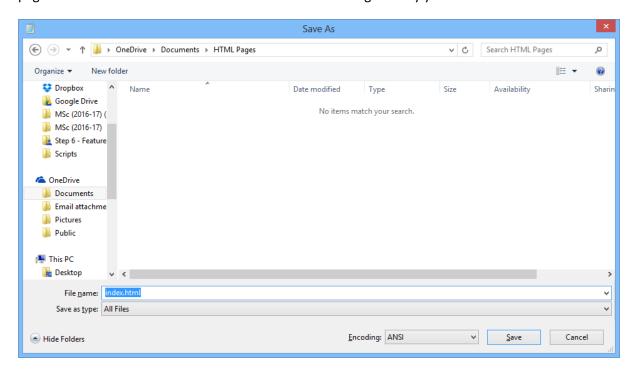
Open Notepad and create a new file.



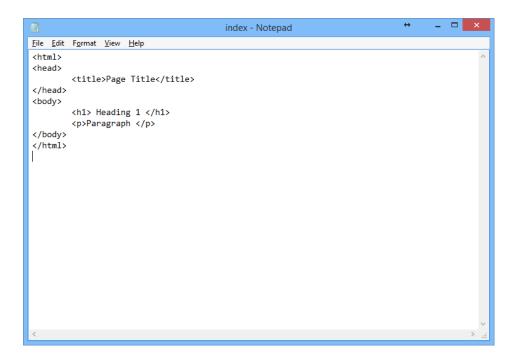
Go to file, save as...



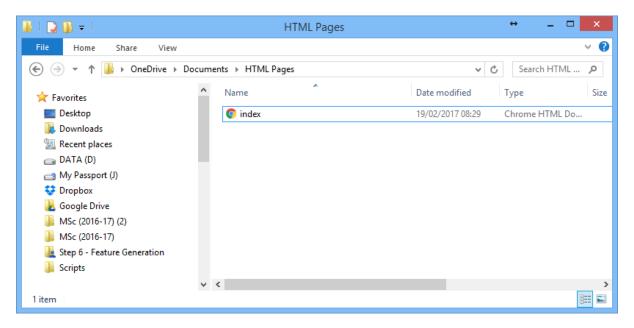
Choose a sensible location for your webpage (somewhere you can find it easily later) and save the file as **index.html** - Don't forget to change the **"Save as type"** setting to "All files" otherwise your page will be saved as index.html.txt which will not be recognised by your web browser.



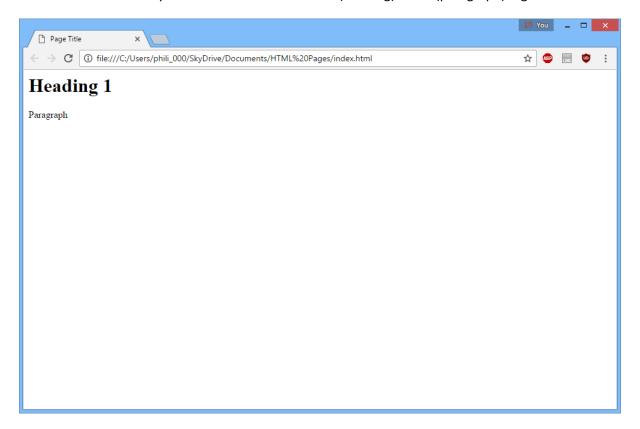
Next edit your file by copying and pasting the HTML skeleton shown previously. Your document should now look something like below.



Once you have saved your HTML page go to the folder where it was saved. You should see that the document contains a Google Chrome icon or an Internet explorer icon — this indicates that the document was detected as a HTML page and thus requires a browser to open it. Double click on the page to open it in your browser.



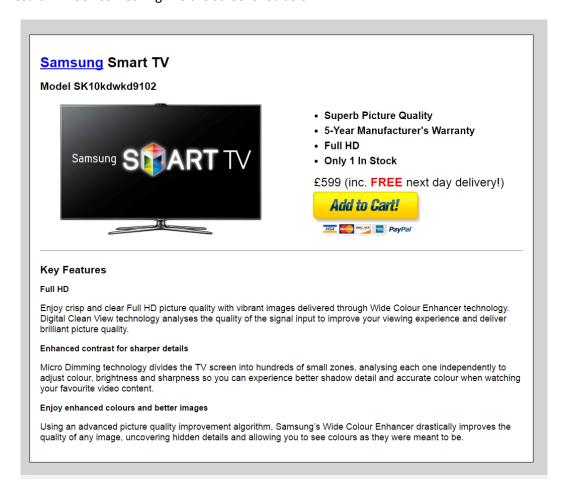
Hopefully you should see something like the following. Note how the web browser doesn't display the raw HTML code but only the text contained in the H1 (heading) and P (paragraph) tags.



# 1.4. Extending the example

So far, we have created a very simple HTML page using a small number of the available HTML tags. Let's now extend this example to use some other useful tags to illustrate how they work. I am going to assume that my HTML page is a product detail page on a small ecommerce website. The product in question is a SMART TV. As such it may contain information about the product including its price, user reviews, stock information and some pictures.

Our result will look something like the screenshot below.



### STEP1:

The first step will be to define a style for my HTML page.

The <style> tag can be used to specify which other tags on the page will be given specific types of formatting. For example, in a word document you might select some text and set its font size. In HTML you can specify the font size for text appearing in one or more specific tags or indeed the whole page. The <style> tag must be contained inside the <head> tag of a HTML page.

Styles are defined using a special syntax that is related to HTML called CSS (Cascading Style Sheets).

In this case I have set the default style for tags appearing in the body, any tag with an ID of container, styles for any <Ii> tags appearing inside an <uI> tag, a style for the or paragraph tag and a style for any tag that has the "free" class applied to it.

Since you may have paragraphs using different formatting rules you can associate each paragraph to a particular style **class**, this way all paragraphs in the same class will have the same formatting applied.

```
<html>
<head>
<style>
body {
        font-size:14px;
        font-family:Arial;
        background-color:#D3D3D3;
}
#container {
        width: 960px;
        padding: 20px;
        border:1px solid black;
        margin: 0 auto;
        margin-top: 50px;
        background-color:white;
        overflow:hidden;
}
ul li {
font-size:20px;
 font-weight:bold;
 line-height: 30px;
p {
font-size:18px;
.free {
color:red; font-weight:bold;
</style>
```

In terms of what formatting I have applied, you can see that I have specified a range of values for different properties. I have set the font of the webpage to Arial and the default font size to 12 pixels.

I have defined a style for any tags on the page with an ID of container (by using the # sign this indicates that there can only be one tag on the page that will receive this specific style). In this case the #container object will be set a width of 960px and have a 1pixel solid black border. In contrast to the body tag, the background of the #container will be set to white.

If you look at this above style information and look at the image of the final result on the previous page, can you start to see where the different formatting rules have been applied?

Add the above CSS style information to your page inside the <head></head> tags.

### STEP2:

The next step is to update the page title. This can be done by editing the <title> tag found in the <head> tag. In this case I set it to the name of the product that the page is about. Note that the title here is not the one that will appear in the page itself, it is the one that will appear title bar of the user's browser.

<title>Samsung TV Model SK10kdwkd9102, £599 including free next day delivery</title>

### STEP3:

The next step is to edit my HTML body to add a containing DIV. A DIV is a special tag used to create a divide between elements. It is a general-purpose tag that is often used to hold groups of other tags appearing in the same area. The purpose of my DIV tag is to create a box in the middle of the web page where the product information will be displayed.

In this case my <div> has an id set to container, hence it will get the style information I defined earlier surrounding its width and background colour. Inside this <div> tag I have created two headings using the h1 and h2 tags. Headings are always defined by the letter h and then a number, the number corresponds to the level, so for example h2 is a subheading of h1.

Finally, inside the first heading where our product name appears I have added an <a> tag. This is a special tag which indicates that a link will be created to another page or website. In this case by reading the href property of the <a> tag we can see that should the user click on the link it will take them to the Samsung homepage.

If you save your HTML file and press refresh on your browser, you should now see your web page starting to take shape.

Samsung Smart TV  Model SK10kdwkd9102				

### STEP4:

In the next step I have added some product detail to the bottom of the page. To do this I have used the <hr> tag (horizontal rule) to create a dividing line between the first two headings and the product features.

For this <hr> tag I have also specified some properties using the style keyword. I have specified that the margin above and below the line must be 25px so that the two sections are separated sufficiently.

Previously we created some style information at the top of our page but this time we have specified it directly. The only potential disadvantage to doing it this way is that if we had a page that contained several horizontal rules, we would have to specify the same style repeatedly compared with if we set it at the top of the page in the <style> tag.

I have used the h2 once again to create a new heading corresponding to the key features and used <h3> tags for the sub sub-headings. The tag is used to create paragraphs containing more details surrounding each of the key features.

```
<div id="container">
       <h1> <a href="http://www.samsung.com" title="More Products by
Samsung">Samsung</a> Smart TV </h1>
       <h2> Model SK10kdwkd9102 </h2>
<hr style="margin-top:25px; margin-bottom: 25px" />
<h2>Key Features</h2>
<h3>Full HD</h3>
Enjoy crisp and clear Full HD picture quality with vibrant images
delivered through Wide Colour Enhancer technology. Digital Clean
View technology analyses the quality of the signal input to
improve your viewing experience and deliver brilliant picture quality.
<h3>Enhanced contrast for sharper details</h3>
Micro Dimming technology divides the TV screen into hundreds
of small zones, analysing each one independently to adjust colour,
brightness and sharpness so you can experience better
shadow detail and accurate colour when watching
your favourite video content.
<h3>Enjoy enhanced colours and better images</h3>
>
Using an advanced picture quality improvement algorithm,
Samsung's Wide Colour Enhancer drastically improves
the quality of any image, uncovering hidden
details and allowing you to see
colours as they were meant to be.
</div>
```

Implement the above changes (shown in bold) to your HTML file and press refresh. You page should now look like the following.

# Samsung Smart TV Model SK10kdwkd9102 Key Features Full HD Enjoy crisp and clear Full HD picture quality with vibrant images delivered through Wide Colour Enhancer technology. Digital Clean View technology analyses the quality of the signal input to improve your viewing experience and deliver brilliant picture quality. Enhanced contrast for sharper details Micro Dimming technology divides the TV screen into hundreds of small zones, analysing each one independently to adjust colour, brightness and sharpness so you can experience better shadow detail and accurate colour when watching your favourite video content. Enjoy enhanced colours and better images Using an advanced picture quality improvement algorithm, Samsung's Wide Colour Enhancer drastically improves the quality of any image, uncovering hidden details and allowing you to see colours as they were meant to be.

### STEP5:

In the next step we create the DIV that will store the image of the Samsung TV. Because we plan to also have some product details on the right-hand side of the page, together with the add to car button, first create an outer containing DIV and then an inner DIV that spans just 50% of its parent width. This inner DIV will be pulled to the left hand side of its parent DIV (float:left) and will have its contents aligned centrally.

Next, we use the <img> tag to add the Samsung TV image and specify a width of 400. We don't need to worry about specifying the height because the web browser will automatically calculate the height by scaling the image's dimensions.

(**NB.** The Samsung TV image I used can be downloaded from <a href="https://www.dropbox.com/s/pl0g3j8uryxa77j/samsung-smart-tv.jpg?dl=0">https://www.dropbox.com/s/pl0g3j8uryxa77j/samsung-smart-tv.jpg?dl=0</a> Make sure that you save it to the same folder as your HTML page)

Add the above HTML code to your page and reload the page in your browser. You should see that the Samsung TV image is displayed on the left-hand side and that there is some free space to the right.

### **Samsung Smart TV**

### Model SK10kdwkd9102



### **Key Features**

### Full HD

Enjoy crisp and clear Full HD picture quality with vibrant images delivered through Wide Colour Enhancer technology. Digital Clean View technology analyses the quality of the signal input to improve your viewing experience and deliver brilliant picture quality.

### Enhanced contrast for sharper details

Micro Dimming technology divides the TV screen into hundreds of small zones, analysing each one independently to adjust colour, brightness and sharpness so you can experience better shadow detail and accurate colour when watching your favourite video content.

### Enjoy enhanced colours and better images

Using an advanced picture quality improvement algorithm, Samsung's Wide Colour Enhancer drastically improves the quality of any image, uncovering hidden details and allowing you to see colours as they were meant to be.

### STEP6:

In the final step we add the DIV that will contain an unordered list of key points about the product. To do this we use the 
 unordered list tag in combination with a series of list item tags.

We use two other DIVs to contain our pricing information and to store the Add to Cart button. This is done so that these two elements are placed on top of each other (as DIVs by default are).

The only other additional tag we need is a <span> tag. This tag is useful when we want to modify part of a section of text. In this case we use the class attribute to indicate that the word "free" belongs to the .free class and thus should have any formatting applied specific to such elements. If you look back to the CSS style, you will see that we set the font colour to red.

(NB. The Add to Cart Image can be downloaded from <a href="https://www.dropbox.com/s/bvj1i2u49ztjqop/add-to-cart-button.jpg?dl=0">https://www.dropbox.com/s/bvj1i2u49ztjqop/add-to-cart-button.jpg?dl=0</a> Make sure that you save it to the same folder as your HTML page)

```
<h1> <a href="http://www.samsung.com" title="More Products by Samsung">Samsung</a>
Smart TV </h1>
              <h2> Model SK10kdwkd9102 </h2>
              <div style="width: 100%; overflow:hidden;">
                     <div style="width: 50%; text-align:center; float:left">
                             <img src="samsung-smart-tv.jpg" width=400 title="Samsung TV
Model SK10kdwkd9102" />
                     </div>
                     <div style="width: 45%; padding-left:45px; text-align:left; float:left">
                                    Superb Picture Quality
                                    5-Year Manufacturer's Warranty
                                    Full HD
                                    Only 1 In Stock
                             <div style="margin-left:20px; font-size:24px">
                                    £599 (inc. <span class="free">FREE</span> next day
delivery!)
                             </div>
                             <div style="text-align:left; margin-left:15px">
                                    <img src="add-to-cart-button.jpg" width=220/>
                             </div>
                     </div>
              </div>
```

The final HTML code listing with all the previous changes applied.

```
<html>
<head>
<style>
body {
       font-size:14px;
       font-family:Arial;
       background-color:#D3D3D3;
}
#container {
       width: 960px;
       padding: 20px;
       border:1px solid black;
       margin: 0 auto;
       margin-top: 50px;
       background-color:white;
       overflow:hidden;
```

```
ul li {
font-size:20px;
font-weight:bold;
line-height: 30px;
p {
font-size:18px;
.free {
color:red; font-weight:bold;
}
</style>
       <title>Samsung TV Model SK10kdwkd9102, £599 including free next day
delivery</title>
</head>
<body>
       <div id="container">
             <h1> <a href="http://www.samsung.com" title="More Products by
Samsung">Samsung</a> Smart TV </h1>
             <h2> Model SK10kdwkd9102 </h2>
             <div style="width: 100%; overflow:hidden;">
                    <div style="width: 50%; text-align:center; float:left">
                           <img src="samsung-smart-tv.jpg" width=400</pre>
title="Samsung TV Model SK10kdwkd9102" />
                    </div>
                    <div style="width: 45%; padding-left:45px; text-align:left;</pre>
float:left">
                           ul>
                                  Superb Picture Quality
                                  5-Year Manufacturer's Warranty
                                  Full HD
                                  Only 1 In Stock
                           <div style="margin-left:20px; font-size:24px">
                                  £599 (inc. <span class="free">FREE</span> next day
delivery!)
                           </div>
                           <div style="text-align:left; margin-left:15px">
                                  <img src="add-to-cart-button.jpg" width=220/>
                           </div>
                    </div>
             </div>
             <hr style="margin-top:25px; margin-bottom: 25px" />
```

```
<h2>Key Features</h2>
             <h3>Full HD</h3>
             Enjoy crisp and clear Full HD picture quality with vibrant images
              delivered through Wide Colour Enhancer technology. Digital Clean
             View technology analyses the quality of the signal input to
             improve your viewing experience and deliver brilliant picture
quality.
             <h3>Enhanced contrast for sharper details</h3>
             Micro Dimming technology divides the TV screen into hundreds
             of small zones, analysing each one independently to adjust colour,
             brightness and sharpness so you can experience better
             shadow detail and accurate colour when watching
             your favourite video content.
             <h3>Enjoy enhanced colours and better images</h3>
             >
             Using an advanced picture quality improvement algorithm,
             Samsung's Wide Colour Enhancer drastically improves
             the quality of any image, uncovering hidden
             details and allowing you to see
             colours as they were meant to be.
             </div>
</body>
</html>
```

# 1.5.Additional Exercises

### STEP7:

Suppose that you wish to add Page Tags to allow tracking of user behaviour using Google Analytics. To do so requires the Google Analytics Page Tags to be placed on every page you wish to track. Use the following code below to install the page tags to your product page. (N.B. <script> page tags should be placed in the <head> section so that the browser loads them as early as possible)

```
<script>
(function(i,s,o,g,r,a,m){i['GoogleAnalyticsObject']=r;i[r]=i[r]||function(){
  (i[r].q=i[r].q||[]).push(arguments)},i[r].l=1*new
  Date();a=s.createElement(o),
  m=s.getElementsByTagName(o)[0];a.async=1;a.src=g;m.parentNode.insertBefore(a,m)
})(window,document,'script','https://www.google-analytics.com/analytics.js','ga');

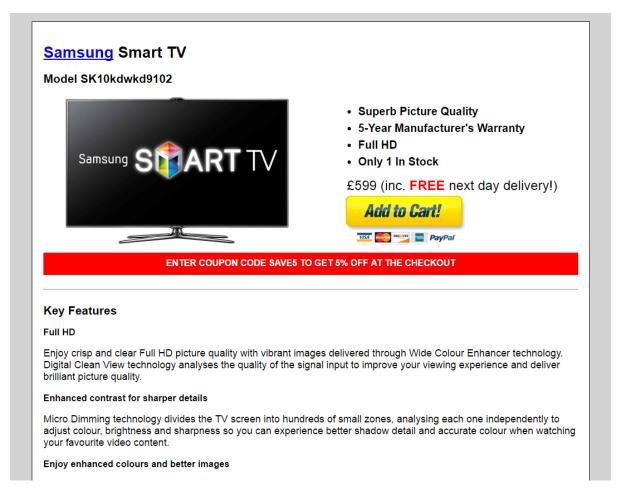
ga('create', 'UA-EXAMPLE-Y', 'auto');
```

```
ga('send', 'pageview');
</script>
```

### STEP8:

Suppose after installing your Page Tags you have found out that other product pages convert customers at a higher rate when a discount code is shown to the user prior to purchasing.

Using your existing HTML and CSS code as a guide, try to modify your HTML to implement a discount code banner. Your final version should resemble something like the following.

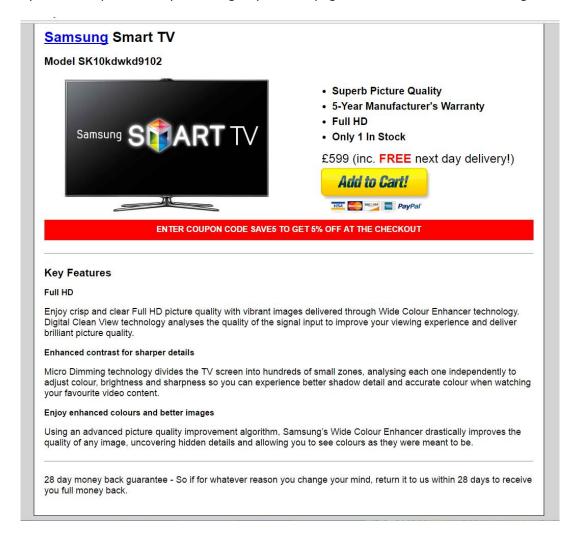


### STEP9:

The company currently offers a money back guarantee - specifically they allow 28 day returns and a full money back policy in cases where the buyer changes their mind. This information should be added to the bottom of the product page.

Modify the HTML so that a new horizontal rule is added after the key features section. Include a paragraph explaining the money back guarantee to customers. As your horizontal rule contains some style information it would be a good idea to move the style information to the CSS style at the top of the page and apply it to all <HR> tags.

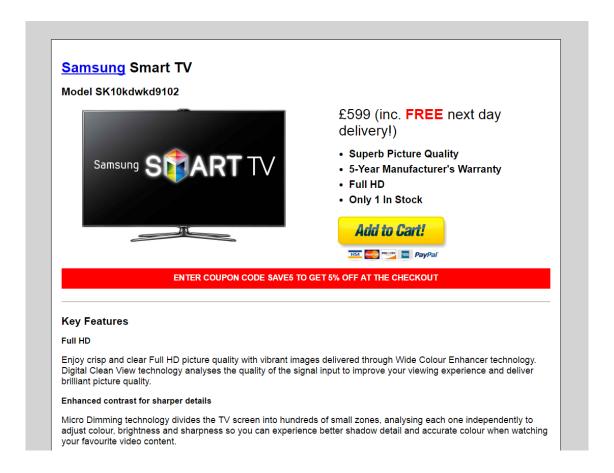
When you have implemented your changes, your new page should resemble the following.



### STEP10:

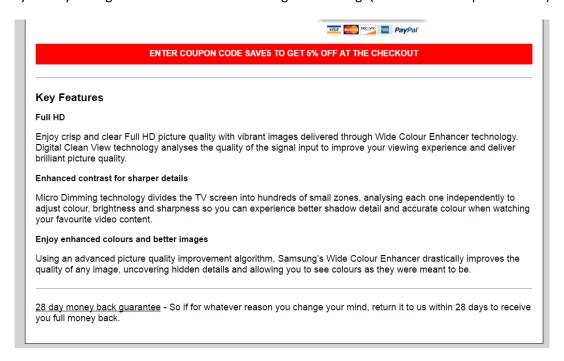
Suppose the owners of the ecommerce site would prefer that the price appears above the bulleted list of key points. Modify your HTML so as to place the price at the top right-hand side whilst at the same time increasing its font size to 28px.

When you have implemented your changes, your new page should resemble the following.



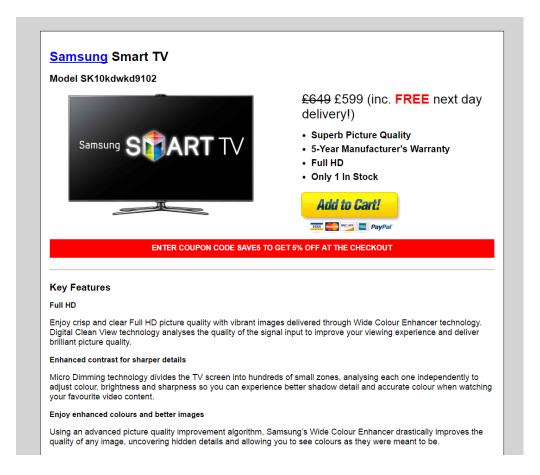
### STEP11:

To make the money back guarantee feature stand out modify your HTML code so that the phrase "28 day money back guarantee" is underlined using the tag. (hint look how <span> is used)



### STEP12:

Suppose the owners of the site want to emphasise that the TV has been heavily discounted since it was first listed on the site a week ago. One suggestion is to display the previous selling price as shown below.



Using information about available HTML tags on the following page (https://www.w3schools.com/TAGs) see if you can identify and apply the correct tag to create the effect shown above.

### STEP13:

The owners would like to test the impact of displaying energy consumption of electrical devices on the product detail page.

For this TV, the following energy consumption estimates are available. Energy Efficiency Rating: A, Annual Energy Usage: £13.44 and Annual Energy Consumption: 78KWh.

Modify your HTML code to incorporate a HTML table with the above information. Your table should appear after the key features and before the money back guarantee information.

### **STEP14:**

As we saw last week meta tags can be used to provide additional meta information about a page that will be read by search engines. Meta tags can only be used inside the <HEAD> tags. Meta tags follow the form.

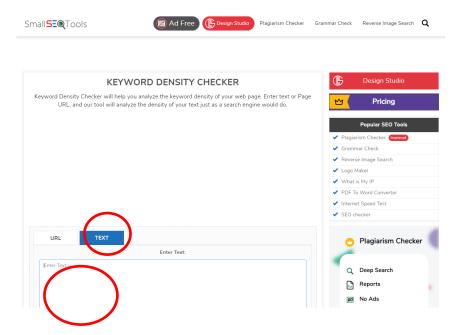
<meta name="" content ="" />

Add some meta tags to your HTML page to include both a description of the page and some keywords that people might use to find it on the web. How might you indicate to the search engines who was the last person to edit the html page?

### STEP15:

Use an online keyword density analyser such as (https://smallseotools.com/keyword-density-checker/) to check how your page is viewed by search engines web crawlers. You will need to select all the HTML of your page and copy it into the box provided.

Comment on the appropriateness of this page in its current form, do you think the page emphasises the correct keywords? Are the keywords very generic phrases that do not help to distinguish what this page is about?



### STEP16:

Hopefully you should have noticed that the product page in its current form is quite generic, and the keyword density of useful phrases is low relative to other phrases in the page. Consider rewording or rewriting the product description shown on the HTML page to incorporate more useful keyword phrases that are likely to deliver more relevant visitors to the page.

For example, this TV set has a very energy efficient rating but because of the keywords used on the page this page might not necessarily match a query by someone searching for an energy efficient TV or for example a TV that has "green credentials".

You can use one or more of the online services listed below to help you find phrases that people actively search for, which could be relevant to this product page, and use them to extend the existing product description. Once you have made your changes reanalyse the density of your HTML page and compare the before and after results.

https://trends.google.co.uk/

https://bing.com

https://www.wordtracker.com/

https://tools.wordstream.com/