University of Greenwich

# COMP–1649
# Interaction Design

Web Application

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# 1. Introduction

The aim and the objective of this project are to design a high fidelity multimedia prototype for website. This website will focus on either male or female clothing ranges for the 18-30 age range primarily.

This report contains cognitive psychology, design principles, methodologies and evaluation techniques.

The design for this website must meet requirement that it works on a variety of digital devices with a range of screen sizes such as desktops, phablet and mobile phones.

# 2. Cognitive Psychology

Cognitive psycholofy is all about how we think. Thinking includes memory, learning, encoding, recall, perception, language, problem solving, abstraction… all of the things we think of when we think of thinking.

There are many researches on the interaction of people on mutilmedia systems and how cognitive psychology affects this interaction. Cognitive psychology can be seperated into many different processes.

## 2.1. Attention

Attention is a concept studied in cognitive psychology that refers to how we actively process specific information present in our environment.

Think of attention as a highlighter. As you read through a section of text in a book, the highlighted section stands out, causing you to focus your interest on that area. Attention allows you to “tune out” information, sensations and perceptions that are not relevant at the moment and instead focus your energy on the information that are important [William James, 1890].

In this case, when users visit a website, they already have their goal. For instance, users want to buy clothing for children, they will go to children section or search products related to children. Furthermore, users always want to buy cheap or sale products then they will notice images of sale products on the website.

Therefore, the information in website should be relevant and target to particular customers. It will make customers more focus on the products that they want to find and decide to buy quickly.

## 2.2. Perception

Perception is our sensory experience of the world around us and involves both the recognition of invironmental stimuli and actions in response to these stimili. Through the perceptual process, we gain information about properties and elements of the environment that are critical to our survival. Perception not only creates our experience of the world around us; it allows us to act within our environment.

Perception includes the five senses: touch, sight, taste smell and taste. It also includes what is known as proprioception, a set of senses involving the ability to detect changes in body positions and movements. It also involves the cognitive processes require to process information, such as recognizing the face of a friend or detecting a familiar scent.

In this context, users visit website and they have visual perception, for instance users can regconize the link when they point to the text because the color of text changes, therefore the usage of color could have different meaning. The website should consider some things to help users perceive information correctly and easily

- Using appropriate icon, color, symbols, etc.
- Using video clips, advertising where appropriate to make customer notice
- Font size and font style are also important

## 2.3. Memory

Memory is a fundamental component of all mental processes. Memory help people remember and regconize things – how to operate specific functions and react upon their commands. People easily remembers images, audio or sound, it's called visualisation.

Human brain can perceive visual information by many ways, however visual imagery allows people to remember things very effectively. Therefore, the use of icons, symbols in a website is very important, it helps people recognize the action without text. Human memory is short-term memory, so the use of pattern design in a familiar way will help users to improve recognition rather than recall and reduce memory load.

# 3. Design Principles

## 3.1. Usability and Accessibility

Usability and Accessibility are two different parts but they have a strong connection with each other. Usability refers to make sure that people can use the product easily and Accessibility is to make even everyone can use the product even disabilities people.

W3C helps to set standards for creating a usable and accessible website:

- Provide equivalent alternatives to auditory and visual content
- Don't rely on color alone
- Ensure user control of time-sensitive content changes
- Ensure direct accessibilty of embedded user interfaces
- Design for device-independence
- Provide context and orientation information
- Provide clear navigation mechanism

## 3.2. Consistent

People are always attracted by changes and differences and changes always catch our attention. When designing an interaction, designer should think about the parts of the interaction that needs user attention and the parts that don't. Maybe that changes can lead to unwanted attention or make lead user to confusion. Therefore, consistency in design is very important and it also gives senses of professionality to the design. There are some guidelines for consistency in web applications:

- Typographic: font face, font size, font decoration, etc.
- Color: text color, background color, border color, etc.
- Navigation: navigation menu design, positioning, and behaviour, etc.
- Hyperlinks: should be in the same color throughout the website and should be distinguishable
- Content: if a word or a phrase used in the interaction meant one thing, then it should mean the same thing wherever it is used throughout the design.

### 3.3. Perceivable

In order to help user interact with the product easily, we should always provide hints that help identify chances for interaction such as animation, tooltip, and different color to emphasize interactive elements from non-interactive ones.

- Text should be legible
- Icons should be easy to distinguish and read
- Hyperlinks should be in different color and should be consistent.

### 3.4. Learnable

In an ideal scenario, users should able to use an interface once, learn it, and remember the experience forever. Learnability is also related to harnessing users' past experience, for instance when users use Word, an icon with the letter (*I*) should do what you expect it to do, depending on the past experience, it changes the text into italic.

- Maximize usage of users' past experience in your design. Anything that can be done such that it is similar to an interaction that users are already familiar with then do it.
- If trying to do something new, then gets some users to test it and get their feedback before launching it live. This often helps refining the interaction such that you end up with a more acceptable design and matches the requirements of the targeted audience.
- Design for reuse: make your interaction design blocks as generic as possible so that you can use them in more than one part of the overall interaction.
- Use language and symbols that are understandable by the targeted audience.

### 3.5. Predictable

In order for an interaction to be predictable, it should have clear answers to the following questions: where are the interaction opportunities?, what can be done? and what will be the outcome?. For example, landing on a payment page, users expect to intuitively identify how to proceed with the process, see how many steps are there, a way to go back and fix there any mistake they made with previous steps, and what will be the next step.

- Make your design as intuitive as possible.
- Provide numbering for any process comprised of steps so users know how many steps left, clearly indicate which step they are currently in, and a rough estimation of how much time it would take to finish these steps.
- Always make sure that things do what people expect them to do. For example, people know that buttons are clickable, so a button should always afford the behaviour of being clickable.

## 3.6. Feedback

Always provide feedback to users. Users need to be aware of whats happening inside the application, whether it is still working, having a problem, or done. However, feedback can take several forms and for a UI designer, the design should be as intuitive as possible. An example of this, when deleting an item from a list, a good intuitive feedback is to remove it from the list. Once its gone, it is then clear for the user that the action has been done successfully. One extra note here is not to overdo feedback this is particularly important as overdoing feedback often leads to irritate users. An example of overdoing feedback is to show a dialog box that says your document has been saved successfully and waits for the user to press “OK”. If I saved a document just save it and give me a hint, why should I take my hands off the keyboard to press a button for that?. The following are some guidelines for providing feedback in user interaction design:

- Always provide feedback for lengthy processes so that people know when a process has started, how much time until it finishes (e.g. using progress bars), and what can be done while the process is being performed.
- Feedback messages should be cheerful, polite and friendly. Error messages must use polite language.
- Do not push it too far: provide enough feedback without irritating users. Too much feedback is often considered annoying.
- Provide feedback about whats important to users. For example, users don’t have to know about any cleanup processes in the background

## 4. Methodology Used

This project will use Rapid Application Development tool as a basic application framework and combine with HTML5, CSS3, Jquery to make the website more dynamic and more interactive. RAD framework will help to develop the project faster, cheaper and also meet all the requirements. The website needs to be fit with all screen size, it's called responsive design, and we can apply some CSS3, Jquery tricks to make a responsive website.

Furthermore, the use of MoSCoW rules in RAD also allows devepers to prioritize functions that they have to finish.

- **M** – Must have this requirements to meet the business needs
- **S** – Should have this requirement if possible, but project success does not rely on it
- **C** – Could have this requirement if it does not affect anything else in the project
- **W** – Would like to have this requirement later, but it won't be delivered this time

There are some steps need to be done on this project:

- **Research** – Investigate how cognitive psychology influences the way users will interact with the system. Finding information of ui design principles and interaction design principles to help designing this application. The aim of the project is to build a website of clothing for male or female, so referencing some famous website of clothings is quite important.
- **Analysis Requirement** – Using MoSCoW rules to decide which pages need to be designed on this project, and how to prioritize the tasks.
- **Design** – Using prototype and low fidelity design to express ideas from the information gathered.
- **Implementation** – From the low fidelity design, developer decide to input data, images into this to make a high fidelity design with the whole pages. The design can be changed and fixed in this stage to make the application better.

## 5. Evaluation Criteria

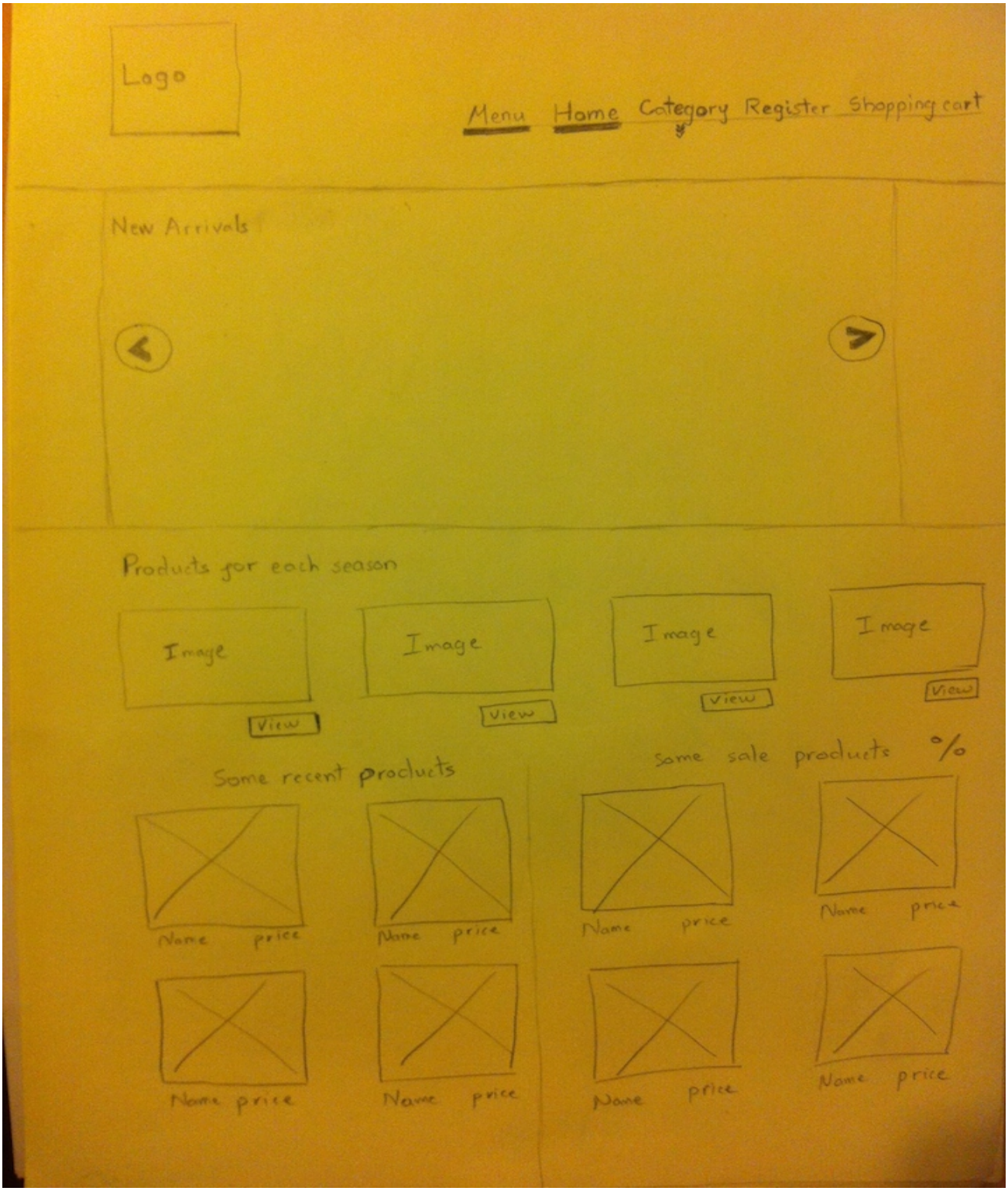
From the investigation of how cognitive psychology affects user interaction and the design principles, this is some criterias to evaluate the product:

1. The navigation of system should be clear, consistent and easy to use
2. Text should be legible, good foreground to background contrast
3. Consistent design for the whole system
4. User control and freedom
5. Recognition rather than recall
6. Flexibility and efficiency to use
7. Layout should be fit with different screen size
8. Visibility of system status, always feedback to user what is happening in the system
9. Avoid requiring the use of horizontal scroll bars
10. The use of color in the interface should appropriate, help user to focus on their desired products
11. User should select products and add it to the shopping cart easily
12. The use of icon, validations should be appropriate
13. Interface should encourage users to explore

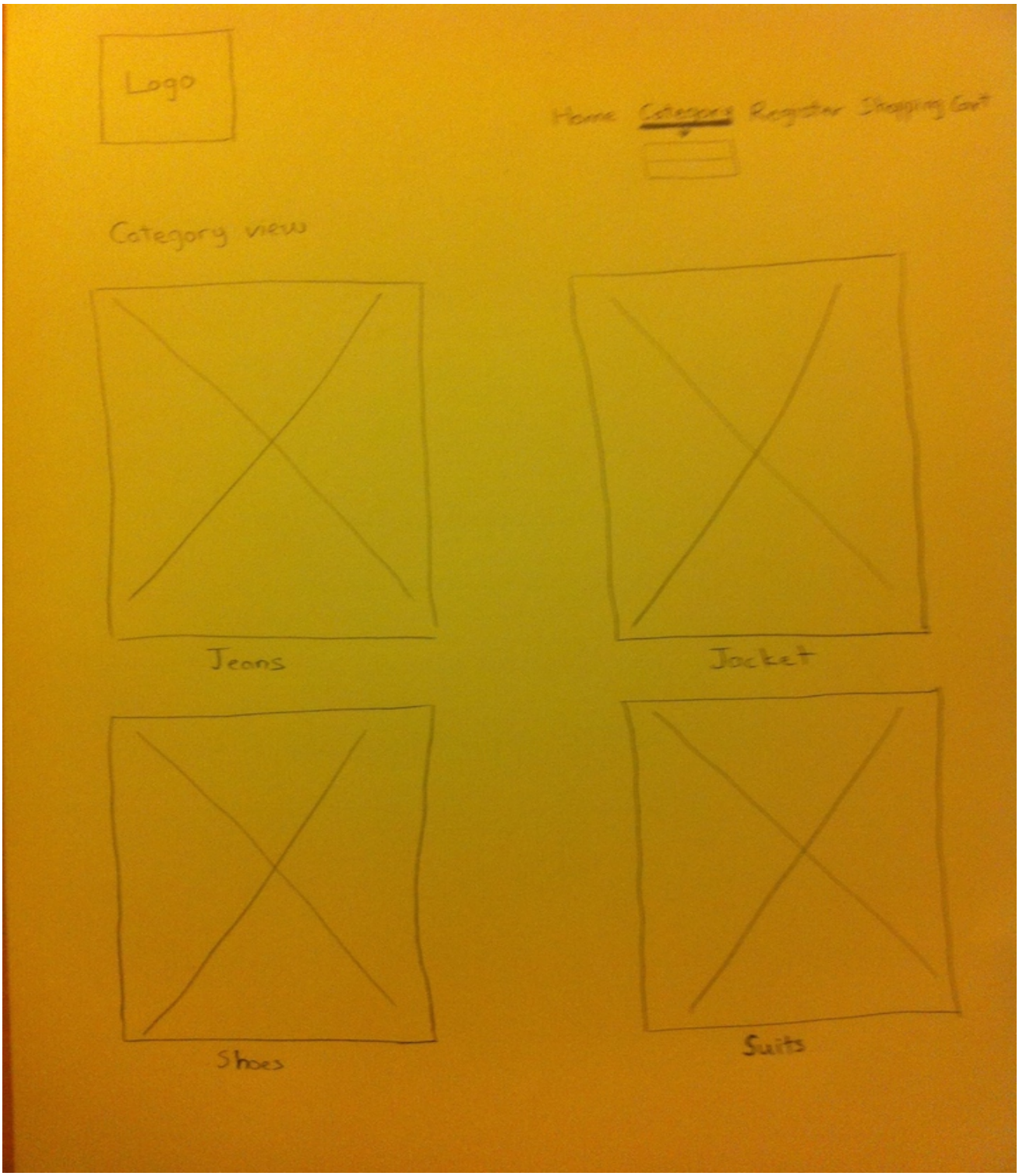
## 6. Low Lever Prototype Design

This website will focus on selling clothing for men and have 5 main pages:

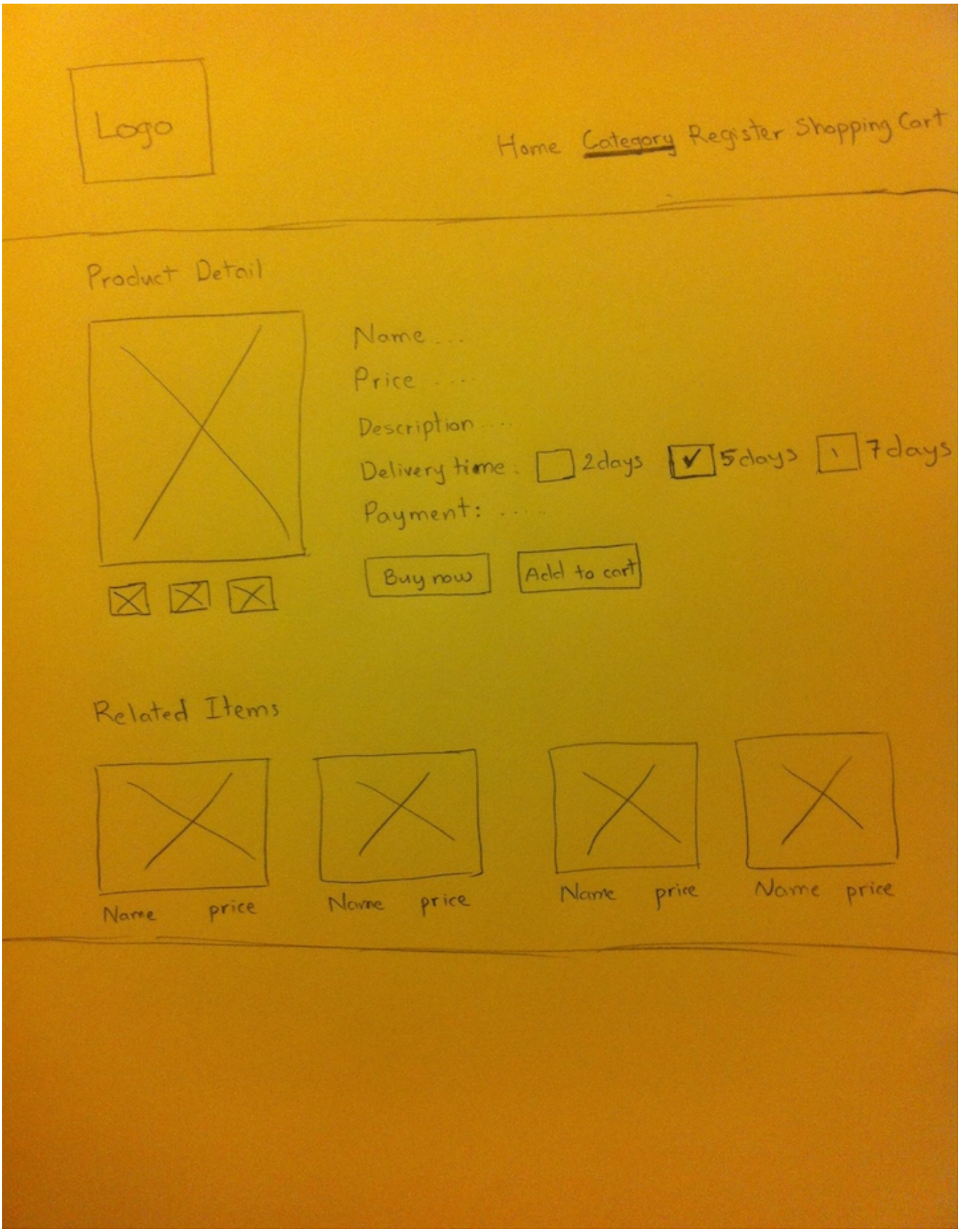
### 6.1. Home page



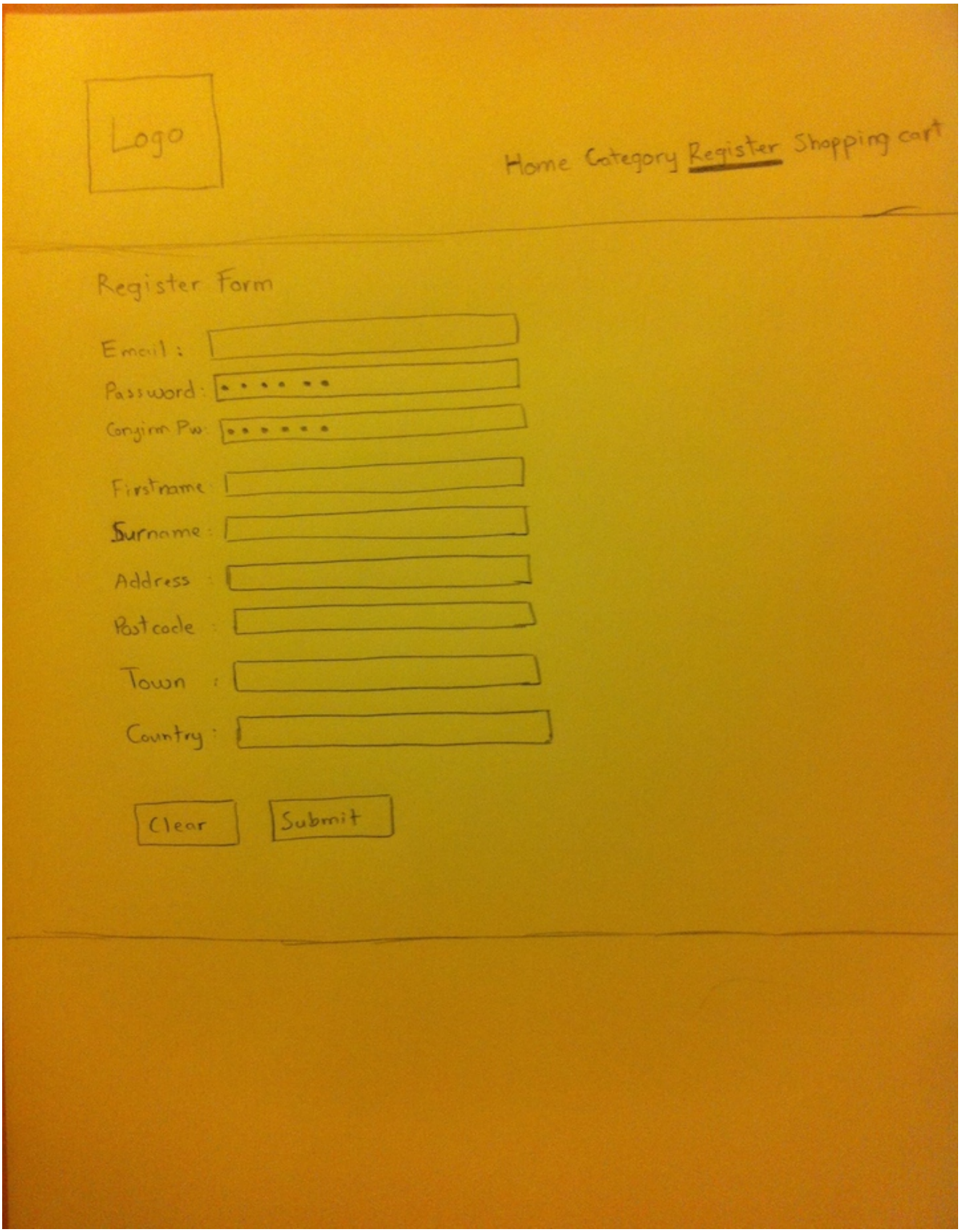
## 6.2. Category Page



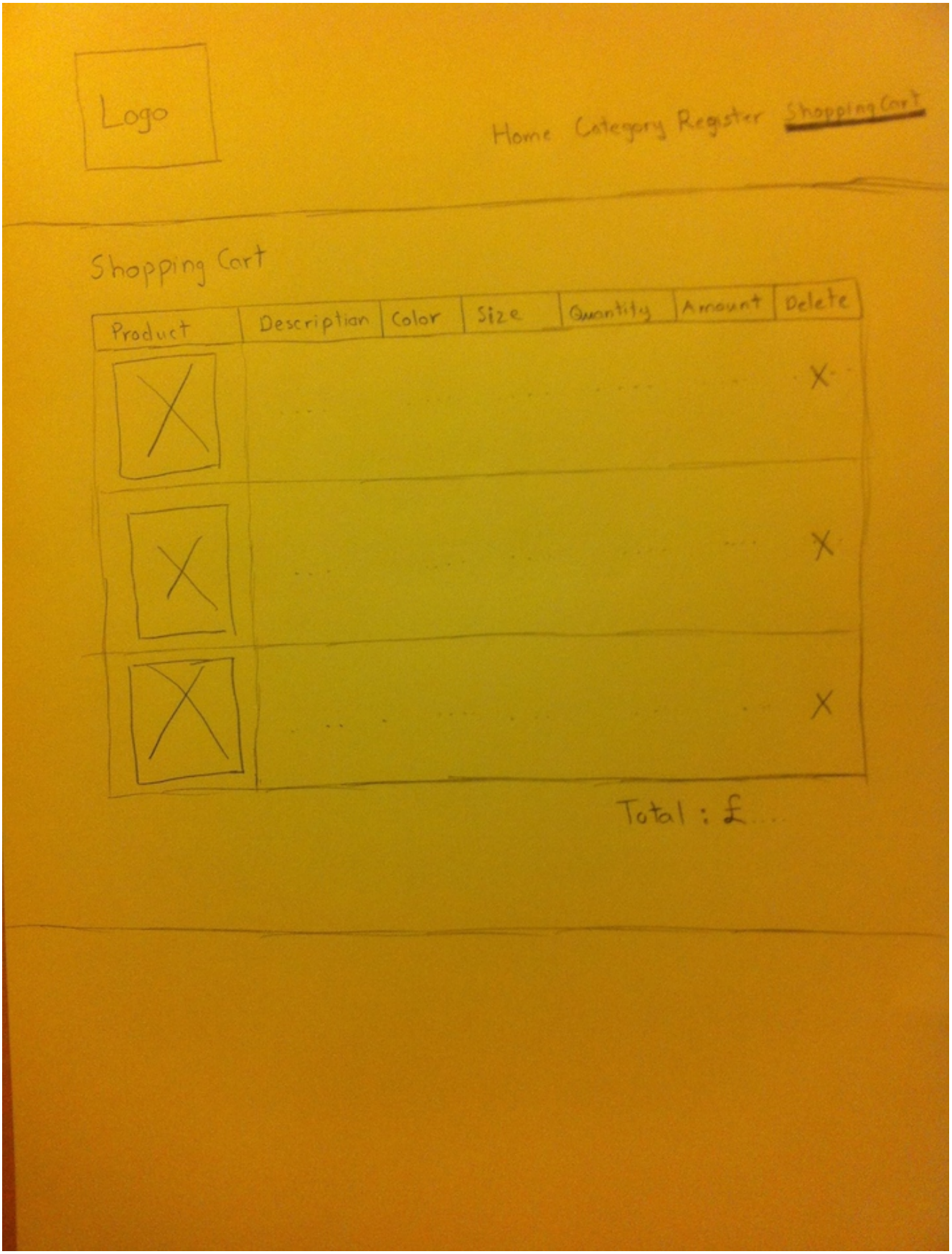
## 6.3. Product Detail Page



## 6.4. Register Page



## 6.5. Shopping Cart Page



# 7. Evaluate High Lever Prototype

## 7.1. Navigation of system should be clear, consistent and easy to use

Figure 1 – Header

Figure 2 - Header

This is the header of website which includes logo and navigation in every pages. When user go to each page then the navigation will change text color and have the red cirle around the item so that user will always know where they are in the system. The Figure1 is the navigation on large screen size, and the Figure2 is the navigation on small screen size. The navigation will be include in a Menu – drop down list.

## 7.2. Text should be legible, good foreground to background contrast

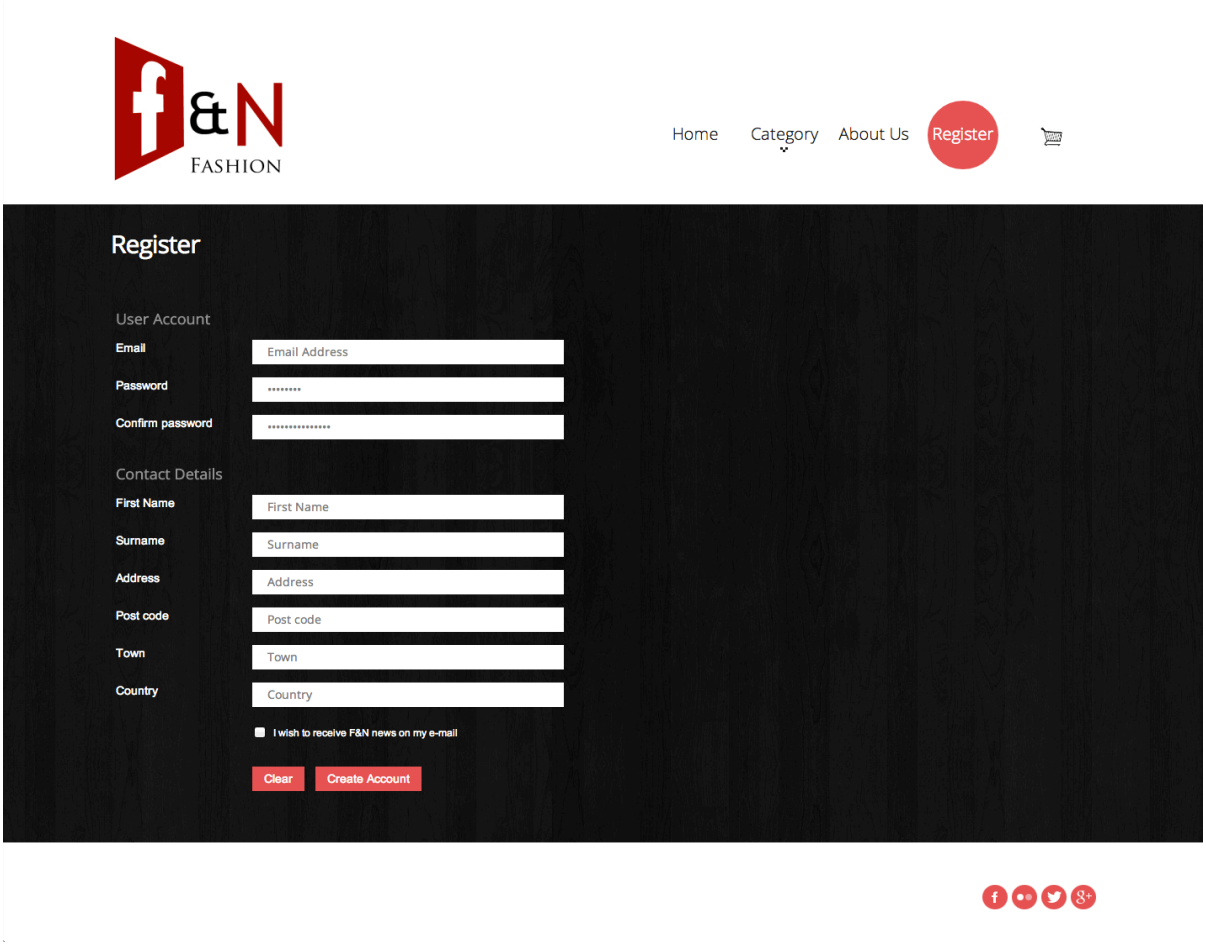



Figure 3 – Register page

The website is designed for selling clothing so layout will contains a lot of images. However, there are some pages have text. For example, the register page use text with color white, also the text in button or in “active” navigation are white, then it makes the contrast with the background and helps users to read easily.

## 7.3. Consistent design for the whole system

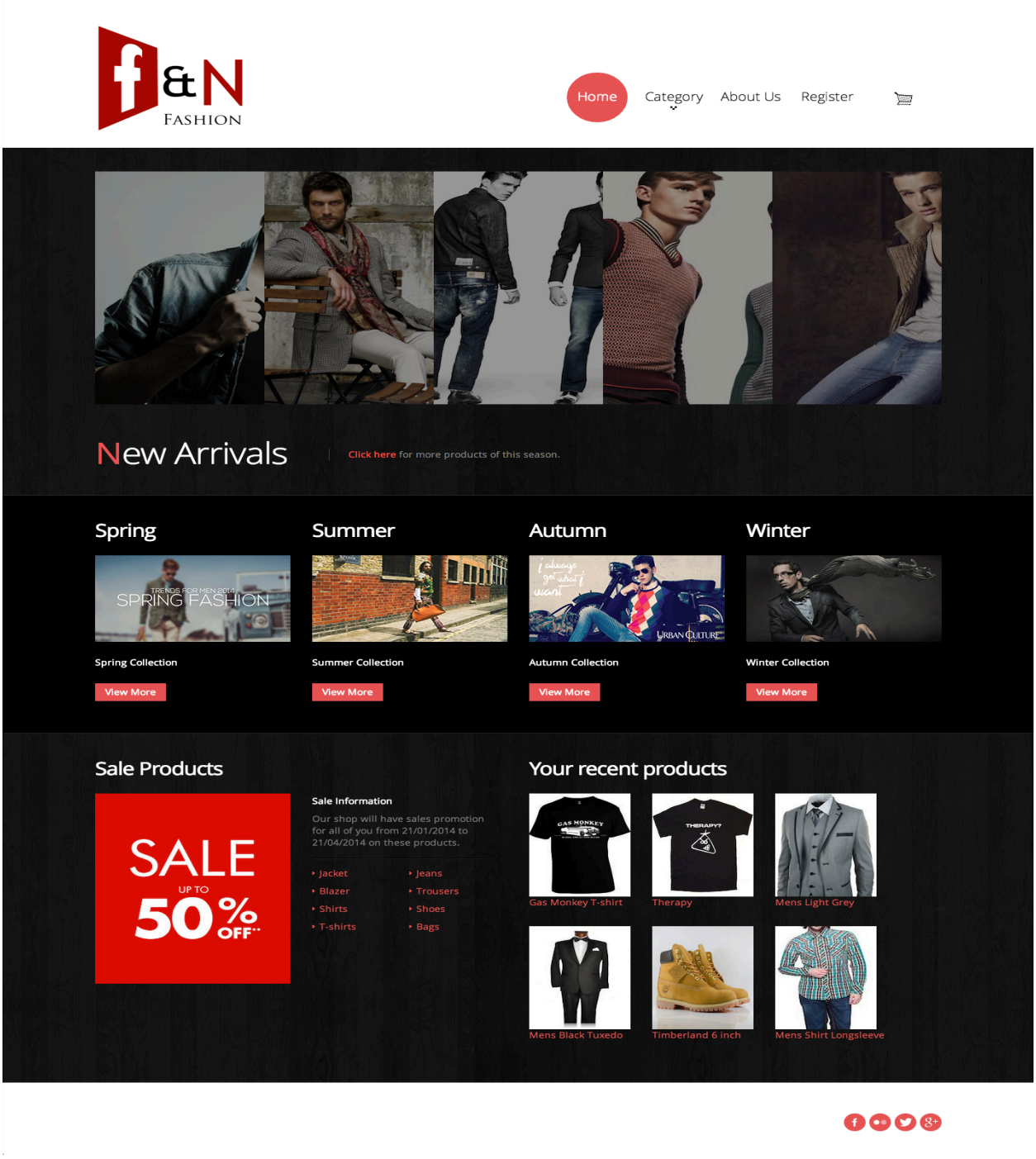



Figure 4 – Home page

The system has consistent design from logo, navigation, background, button, and link.

## 7.4. Recognition rather than recall

Because the system has simple and consistent design, users can use the website very easy. The use of icon “shopping cart” make users know what exactly the page will show, that users can find every items that they choose to buy.

## 7.5. User control and freedom

Users are free to control the website. User can register and buy any products, if they change their minds, they can delete the item in the shopping cart. The system also provides user function view recent items that they watched by click on images ("Your recent products" section – Home page)

## 7.6. Flexibility and efficiency to use - The use of icon, validations should be appropriate

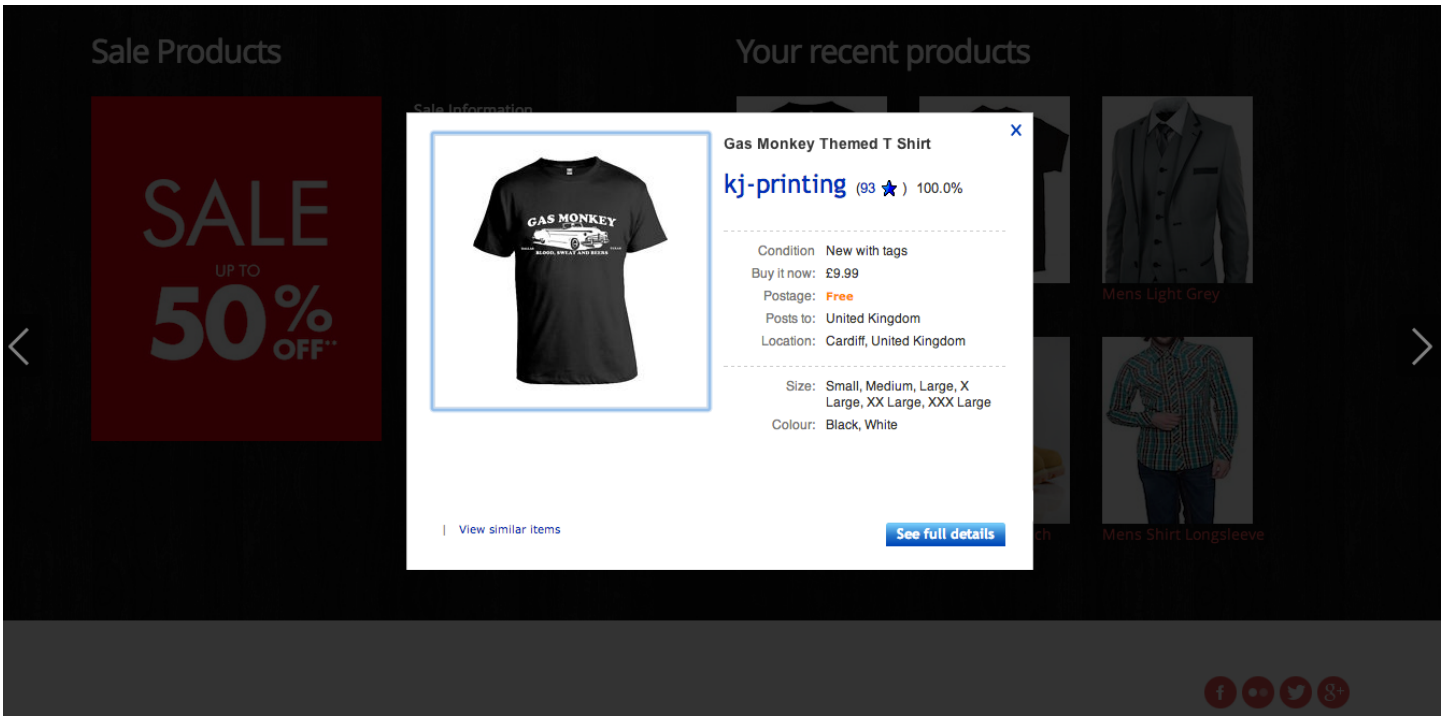



Figure 5 – Recent product

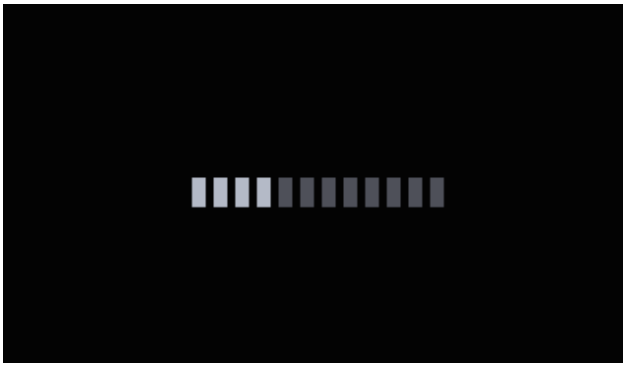
The function view recent product help users don't have to remember which products they have watched, or they can decide to buy later. In register page, the validation in each field right after users change field, this would help users know what they have to type in field, make sure they submit the valid form data.

## 7.7. Interface should fit with different screen size

The image on right side is register page on devices that have small screen size, the information still enough for users to see on each page. For example, with table data, if there are many columns then it just keeps the important columns in the table when showing on small screen.

Every page of this website are designed to fit with different screen size. Image, button, navigation will be collapse or smaller to fit the screen.

### 7.8. Visibility of system status, always feedback to user what is happening in the system



Everytime users go to other pages, the image “loading page” will appear to let user the status of system as well as loading images like 2 images above.

### 7.9. Avoid requiring the use of horizontal scroll bars

The horizantal scroll bars are not suggested to use in every pages because users will feel annoyed when using it. Therefore, every pages in this website just use vertical scroll bars.

### 7.10. Color in the interface should appropriate, help user to focus on their desired products

The design use dark background and red text to show name, price of product to make users focus on product, red color also attracts users. Color in every page is keeping consistent to make the layout have a better view.

### 7.11. User should select products and add it to the shopping cart easily

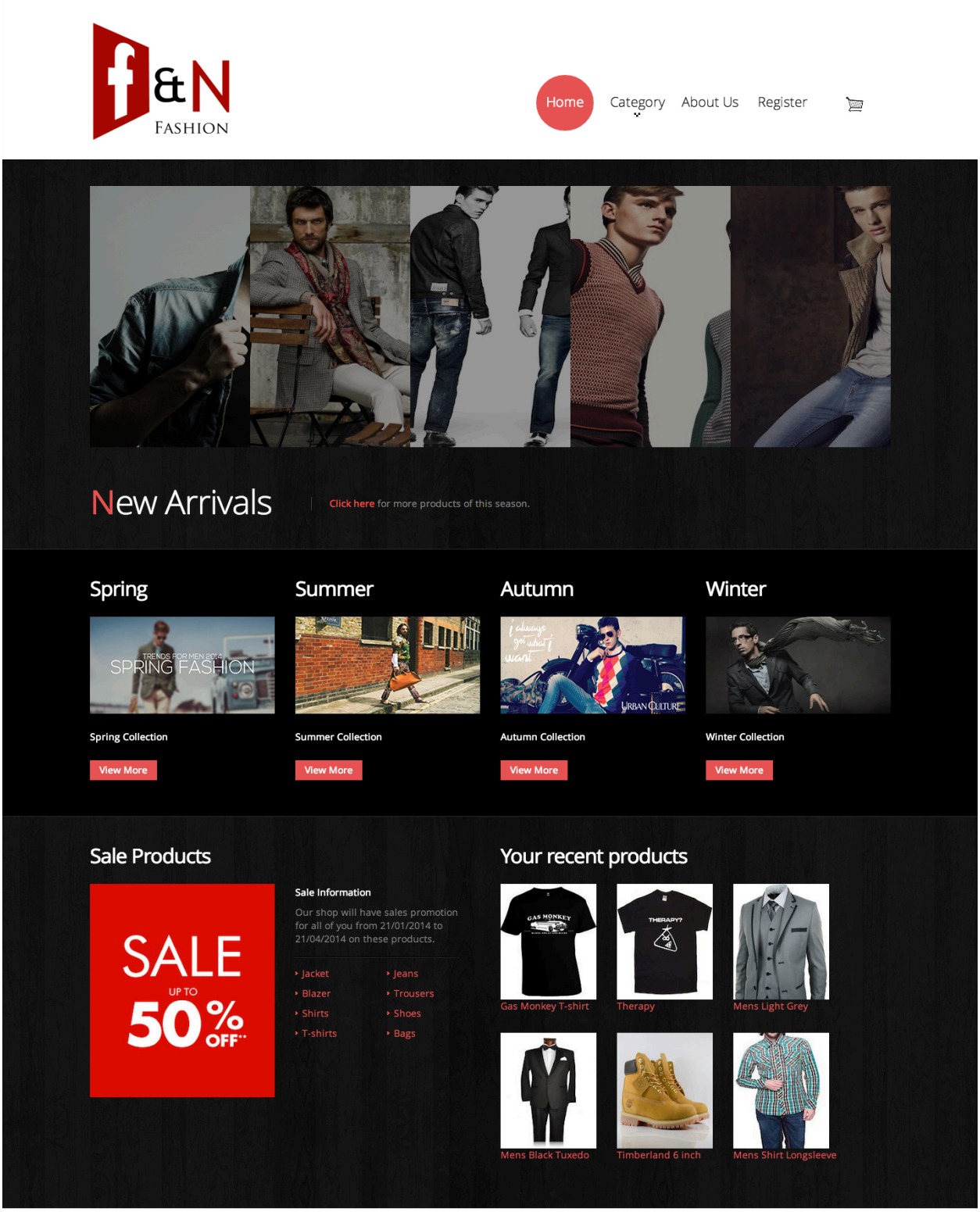
The image of products in website quite big, and users can easily choose product and add to shopping cart. They can also view which products are added in their basket.

### 7.12. Interface should encourage users to explore

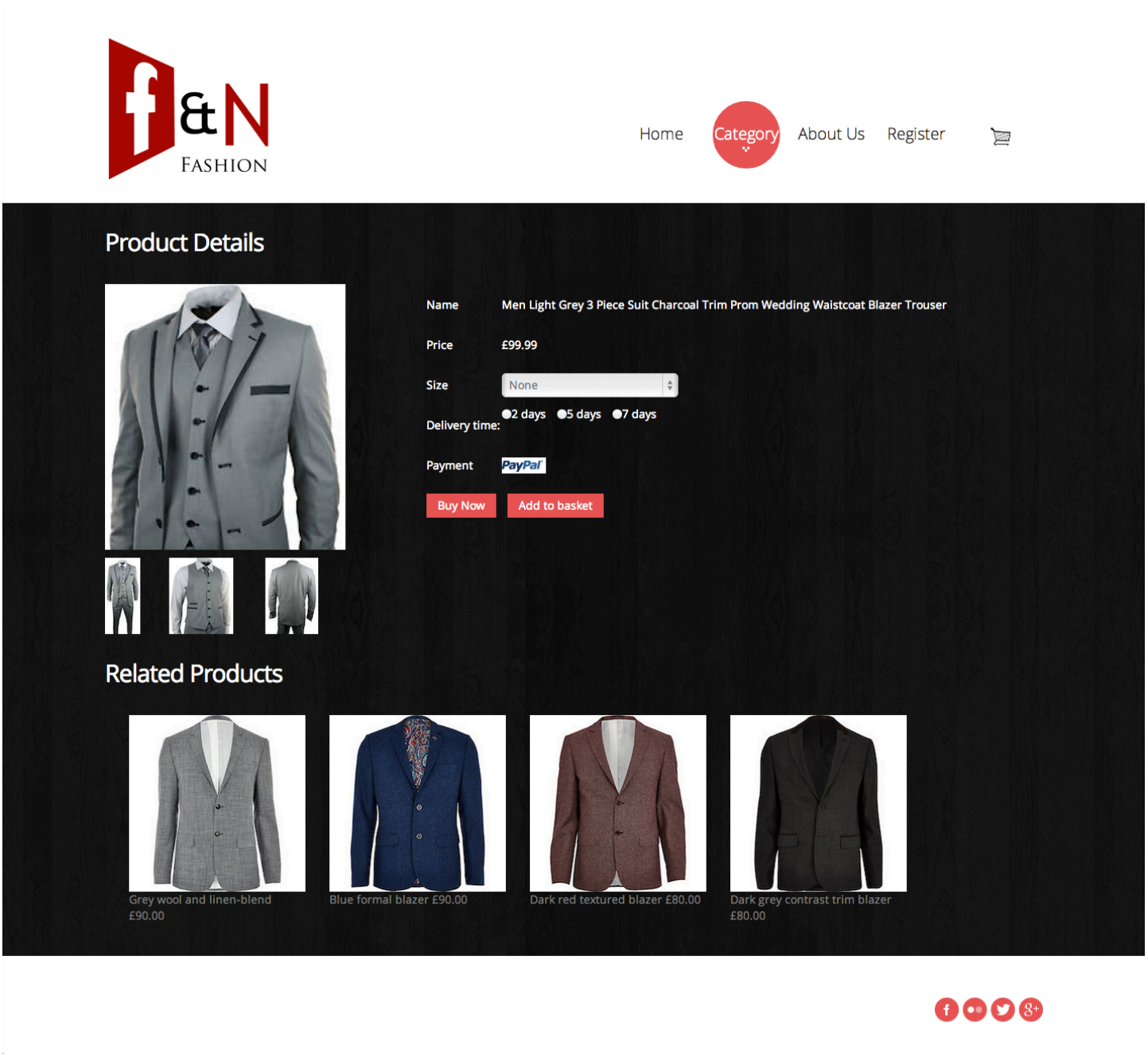
The consistent usage of color, navigation, buttons, etc help users to remember the design and want to use it more usual. Moreover, the animation at home page used on carousel of new arrivals also makes users notice these products and want to see them.

# 8. High Lever Prototype

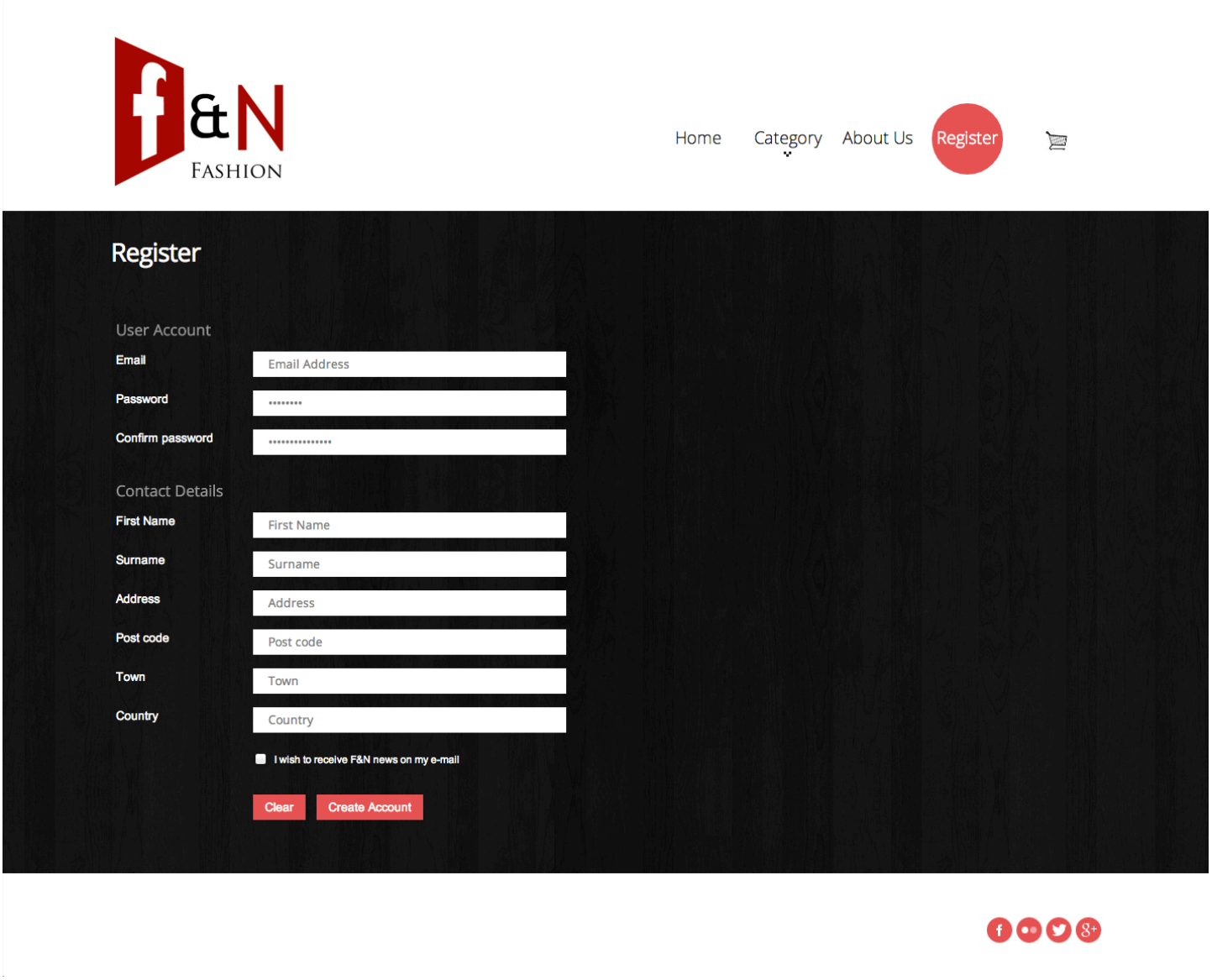
## 8.1. Home Page



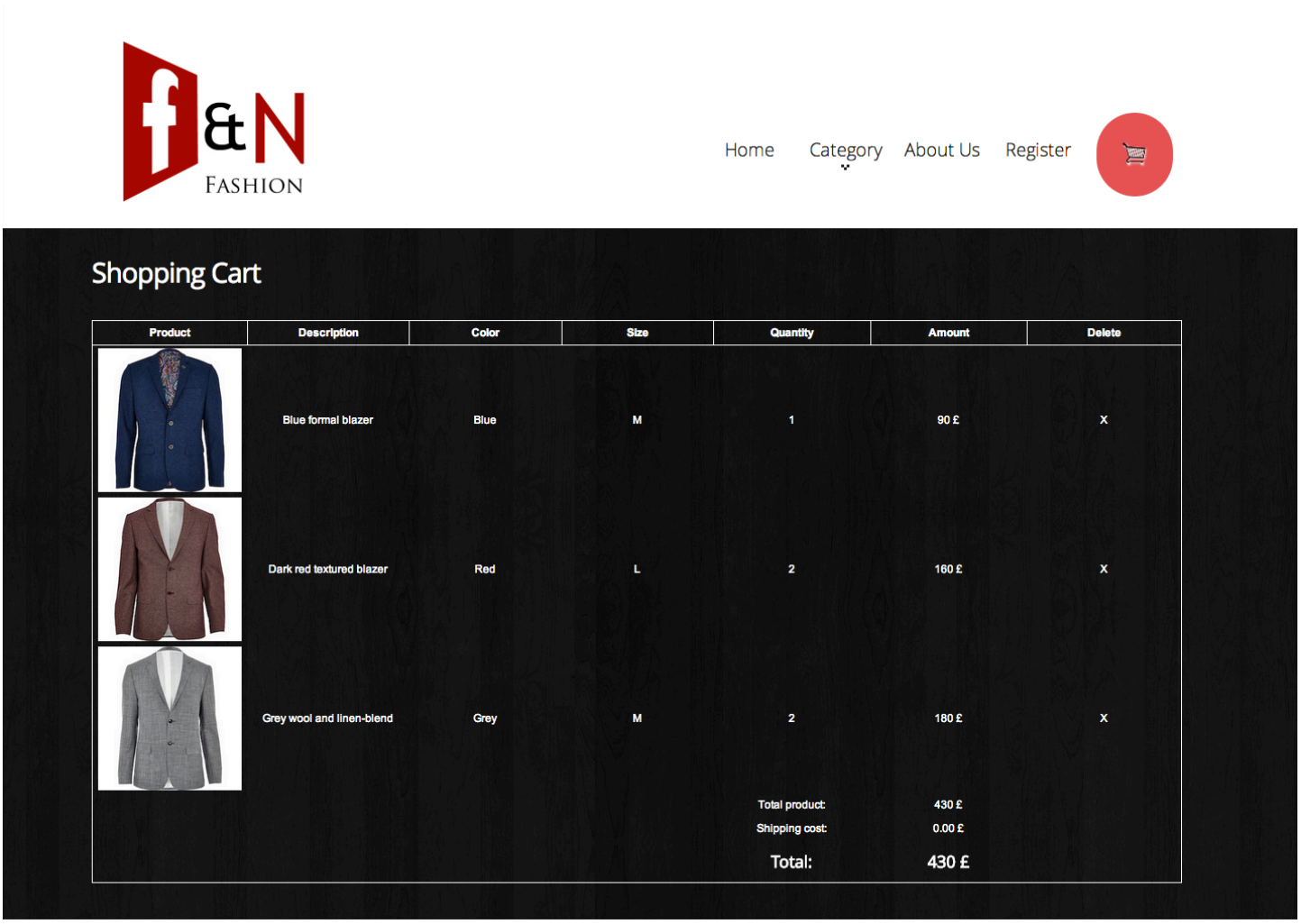
## 8.2. Product detail page



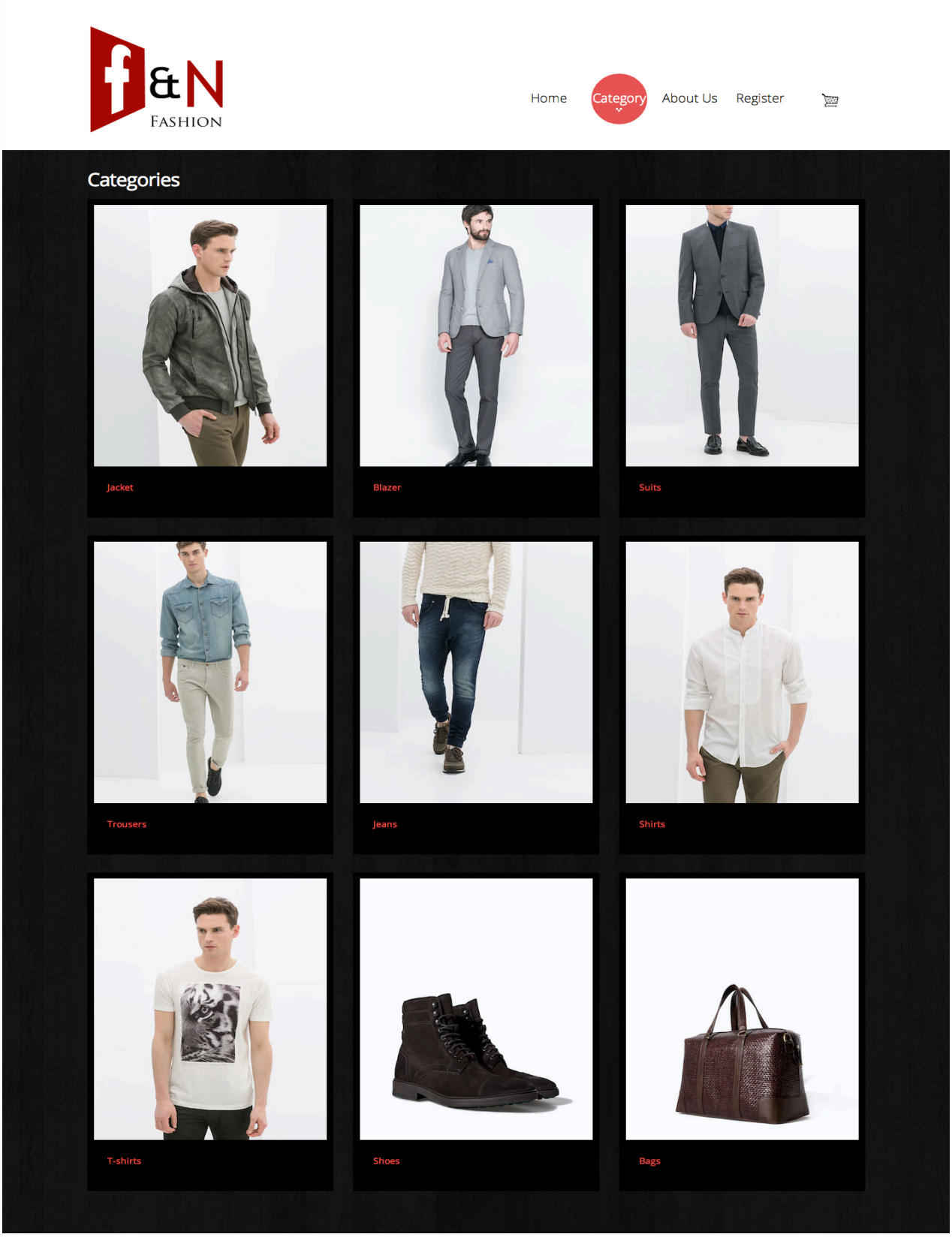
## 8.3. Register page



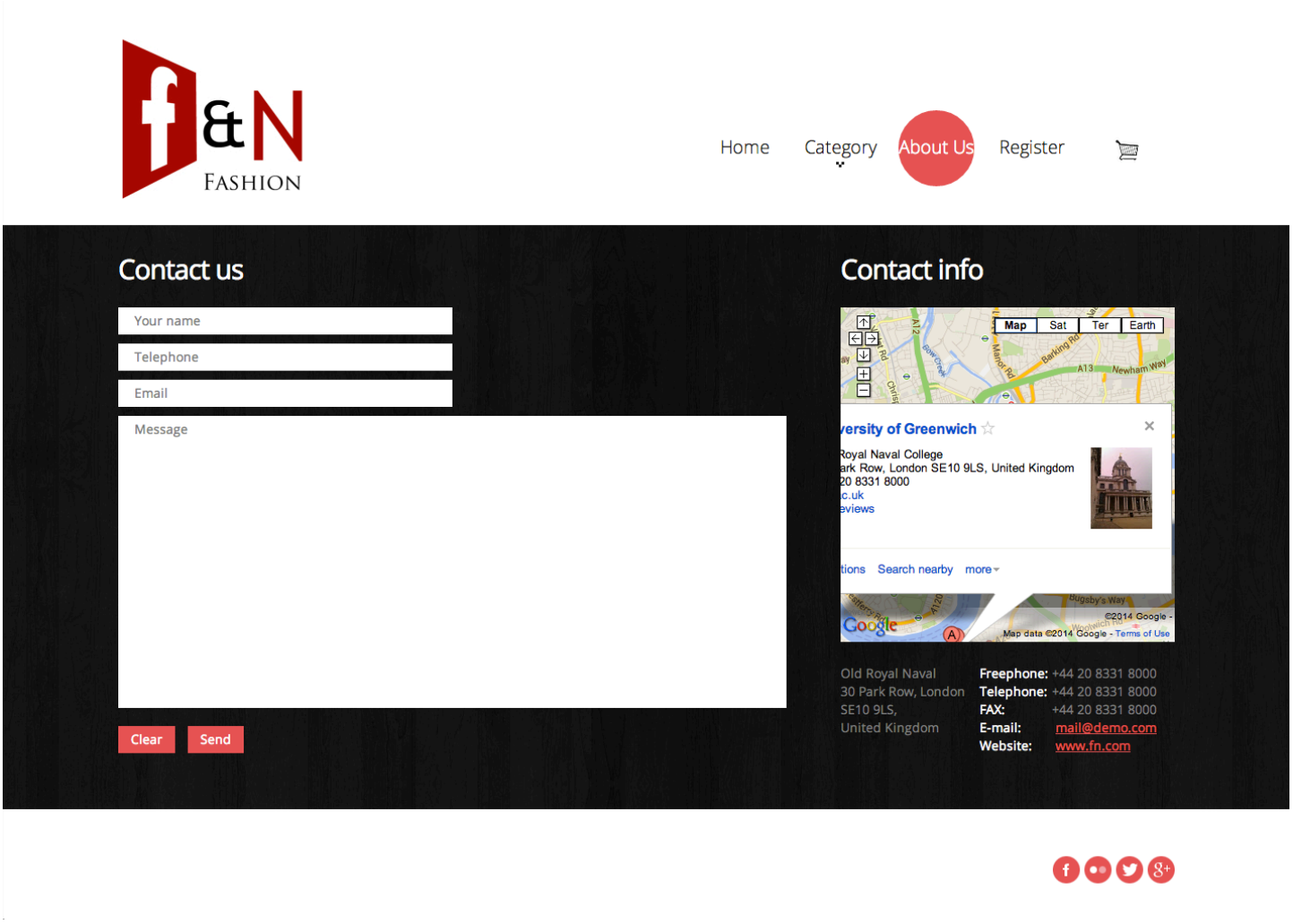
## 8.4. Shopping Cart



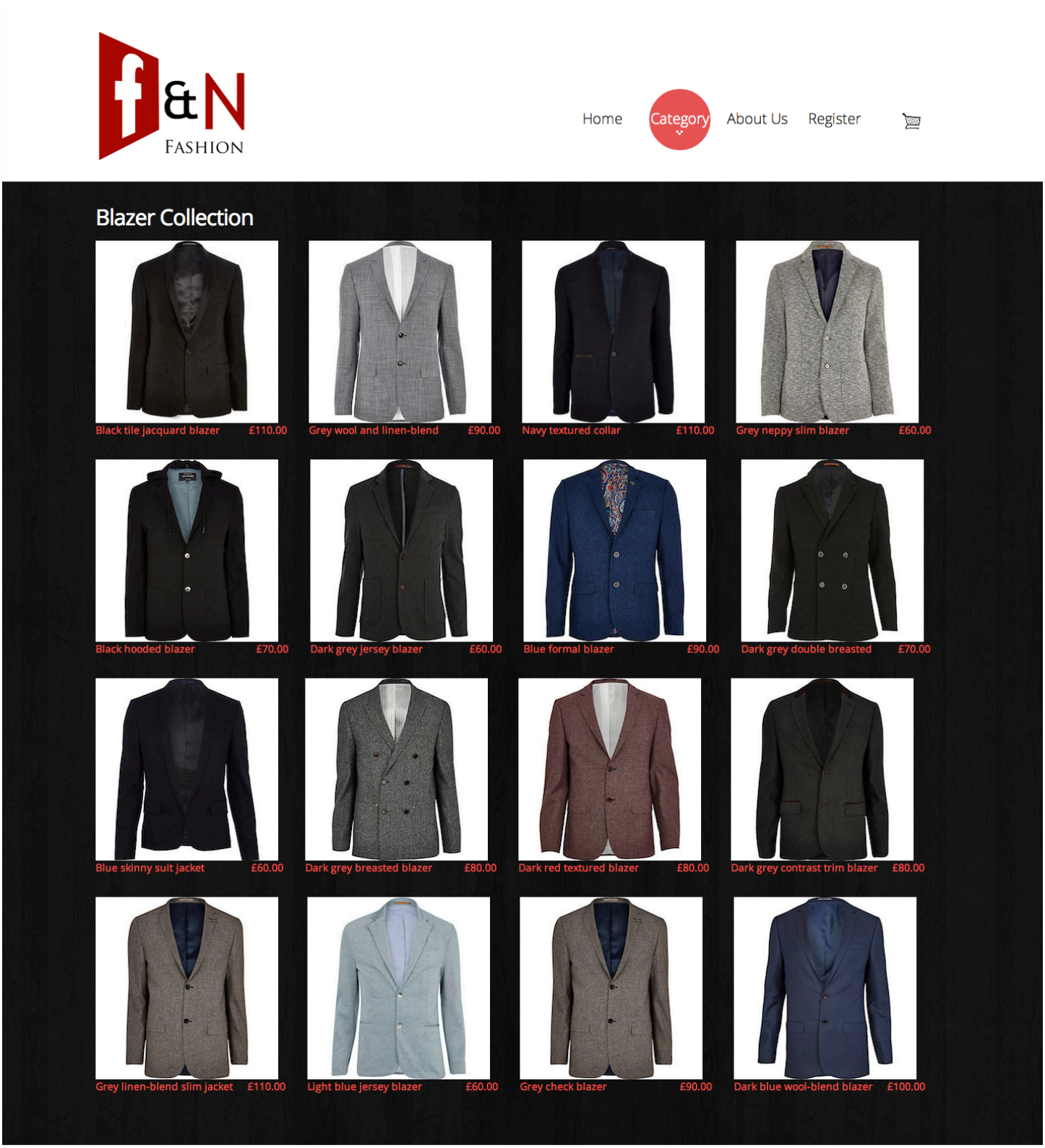
## 8.5. Category page



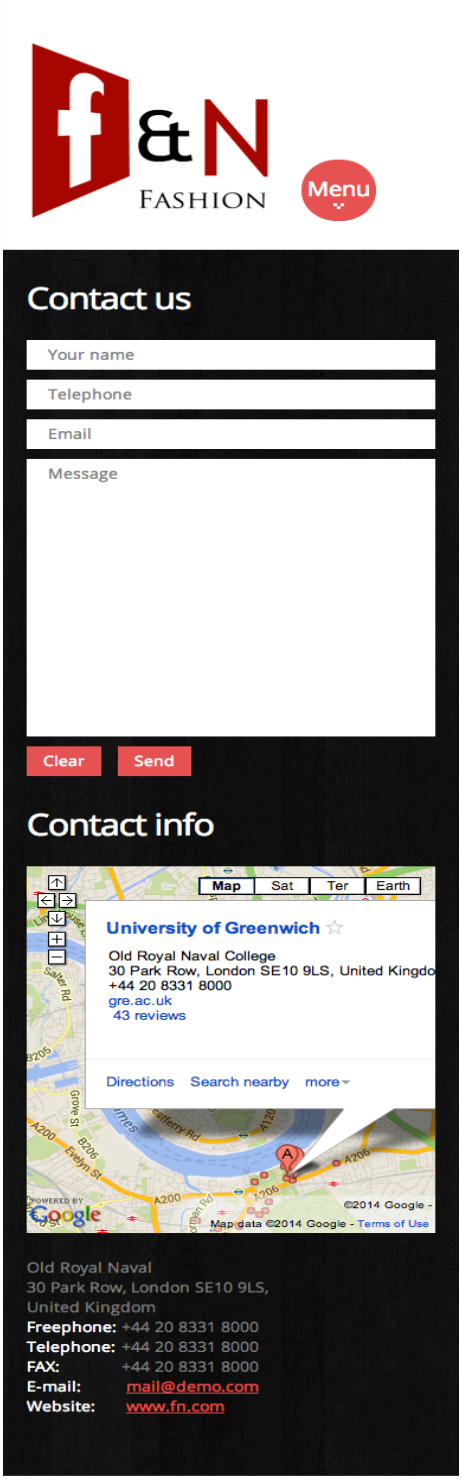
## 8.6. About us page

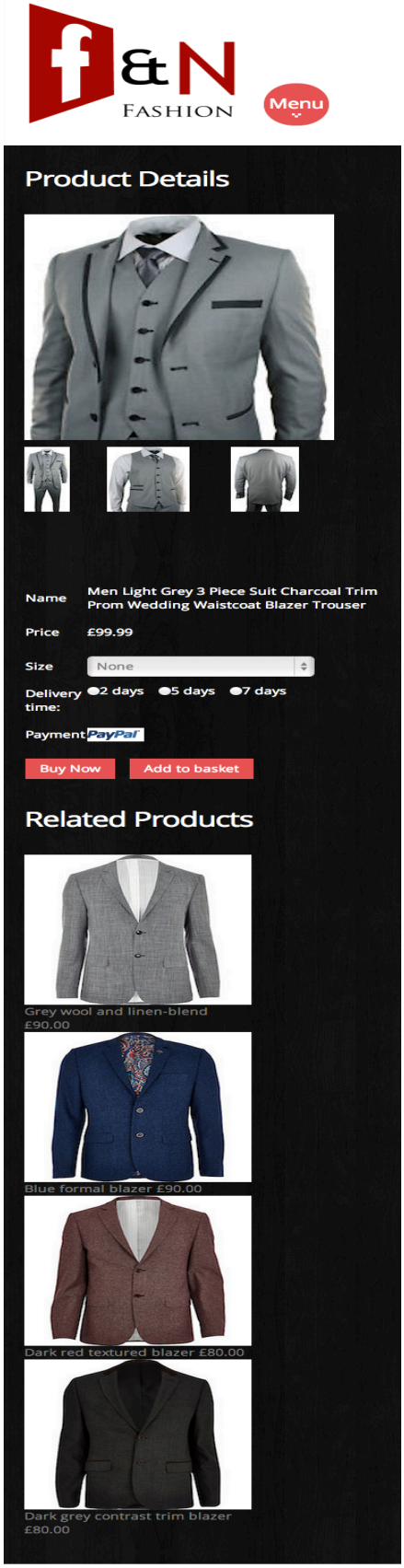


## 8.7. Product in category



# 9. Interface fit with small screen





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