

**National University of Singapore  
School of Computing**

**IT5004 Enterprise Systems Architecture Fundamentals  
Assignment 1: Requirements Analysis**

**Easy T-shirts (ET)**

Easy T-shirts (<http://www.easytshirts.sg>) is a new online portal for T-shirt lovers. The site is used by various types of users. T-shirt designers can submit their T-shirt design artwork, T-shirt shoppers can vote for their favorite T-shirt designs and/or buy these custom-designed T-shirts from the portal, and ET staff can manage various aspects of the portal.

ET provides a platform for T-shirt designers to submit their artwork either by uploading images or designing through the online T-shirt design tool. The design tool is a web application where users can create their T-shirt designs directly on the web browser. The tool comes with various T-shirt templates, cliparts, icons, word art, shapes, and other drawing capabilities. Designers earn some credits for submitting artwork. If their artworks are eventually chosen to be printed onto actual T-shirts and sold, they also receive credits as part of their commission<sup>1</sup>. These credits can be withdrawn in the form of cash into a bank account.

Popular designs are chosen by the ET staff to be sold as custom-designed T-shirts on the portal. Shoppers can then buy these T-shirts online from the site at affordable rates. To decide which are the popular designs, the site comes with a voting mechanism where users can vote 1 to 5 for a T-shirt. Voting is available for a time duration (e.g. 1 week) after the design is submitted. At the end of the time period, the system calculates the overall rating score and ranks the designs. The top few designs (either based on popularity or rating score) are chosen manually and listed on the site for purchase. Shoppers can browse through the list of available designs by categories<sup>2</sup> (e.g. Abstract, Geeks, Political, Religion, etc). Buying a T-shirt is similar to shopping for items from an e-commerce platform: select the T-shirt design, indicate the size of the T-shirt, indicate the shirt color (e.g. grey, white, black, etc) that is used for printing the design, add to cart, indicate shipping address and email address, and make payment using a credit card. Before making payment, the page should show a confirmation page showing the full price of the T-shirt(s) together with the shipping fees<sup>3</sup>. Designers can also buy T-shirts using their credits instead of withdrawing out as cash. Each ET credit is worth SGD\$1 when it is withdrawn but is worth \$1.1 when it is used for purchasing items from the site. To use the credits, the site allows designers to log onto their accounts before they enter the credit card payment details. Members can also log onto their account to use their ET points<sup>4</sup>. Users receive 5 ET points for voting on design, 50 ET points for indicating that they have received their purchases, and some ET points for shopping during special events. The site provides a link for users to register as members<sup>5</sup>. For unregistered users, the site will also send an invitation email (with some free ET points) to entice them to register as members after their purchases. Shoppers are however allowed to complete their online purchases as guests and are not required to register as members to buy things. For all purchases, the shopper should receive an email confirmation of their purchases.

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<sup>1</sup> The credits are computed by the system at the end of each month.

<sup>2</sup> Designers need to indicate their design category when they submit but this category might be re-classified by the ET staff before they are listed.

<sup>3</sup> The shipping fee is flat rate of SGD\$4.99 for 1~5Qty, \$7.99 for 6~10 Qty, etc, so shoppers are encouraged to add multiple T-shirt designs or multiple quantity before they check out the cart.

<sup>4</sup> 100 ET points = SGD\$1 (members can only use up to a maximum of 500 ET points each time).

<sup>5</sup> A T-shirt designer has to first register as member before he/she can submit a T-shirt artwork. There is no special differentiation between a designer account or a member account. T-shirt designers are really just normal members who submit T-shirt designs.

ET staff manages various aspects of the portal. For example, the staff can specify the voting time duration, specify the minimum threshold before the designers receive any credits for their design, specify the amount of credits received by designers when their designs are printed and sold, etc. They can also delete T-shirt designs to clean up the pages (in case some members are not professional T-shirt designers but just playing around with the T-shirt design tool).

1. Draw an activity diagram to illustrate the process that takes place before a T-shirt designer gets paid for his/her T-shirt design. Please adopt the swim lane approach. **You should make your own assumptions (if it is not illustrated in the passage) to ensure that the flow makes sense. State any assumptions after the activity diagram.**

(6 marks)

2. Develop a use case diagram for the Easy T-shirts system showing **all** the use cases and their associated actor/actors.

(6 marks)

3. Produce the fully-developed use case description for the following use case using the given template. **Note that when writing down the flow of events, think about how a system would have to go about processing the use case. You should make your own assumptions (if it is not illustrated in the passage) to ensure that the flow makes sense. State any assumptions after each table (if necessary). Do not forget to indicate what database record(s) is/are created/updated/deleted.**

(8 marks)

<b>Use Case:</b>	Make a purchase	
<b>Triggering Event:</b>		
<b>Brief Description:</b>		
<b>Actors:</b>		
<b>Pre-conditions:</b>		
<b>Post-conditions:</b>		
<b>Flow of Events:</b>	Actor	System
<b>Exception Conditions:</b>		