Diploma Programme
Programme du diplôme
Programa del Diploma

Information technology in a global society
Standard level
Paper 1

Wednesday 16 November 2016 (morning)

1 hour 30 minutes

Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer two questions. Each question is worth **[20 marks]**.
- The maximum mark for this examination paper is **[40 marks]**.

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Answer **two** questions. Each question is worth [20 marks].

1.   **Choosing a search engine**

Disney Studio films are frequent targets of movie piracy. *Disney* does not believe that today's search engines provide enough protection from piracy. For this reason, *Disney* has filed a new patent to create a search engine that filters undesirable results, such as piracy websites.

Most of today's search engines, such as *Google*, judge a site's value by its popularity. *Google* uses Googlebot software to crawl the web, following links from page to page, and then uses PageRank to rate web pages based on a score. Sites are assigned scores based on whether links to them come from well-established, credible pages. The sites are then shown in the search result list, allowing the searcher to select the right sites. PageRank is intelligent enough to differentiate between the quantity and quality of links on a site. If one site has five high-quality links from important sites and another has 10 low-quality links from unimportant sites, the site with the high-quality links will be given a higher PageRank score.

Disney's new search engine ranks pages based on authenticity values, and decides which movies are from authentic websites and which are from pirated websites. Simple searches, such as the one below, return a title, description and a URL when typing in a movie title. However users can use more advanced search tools, such as Boolean operators, to help limit, broaden, or define their search.

Figure 1: The Disney search engine
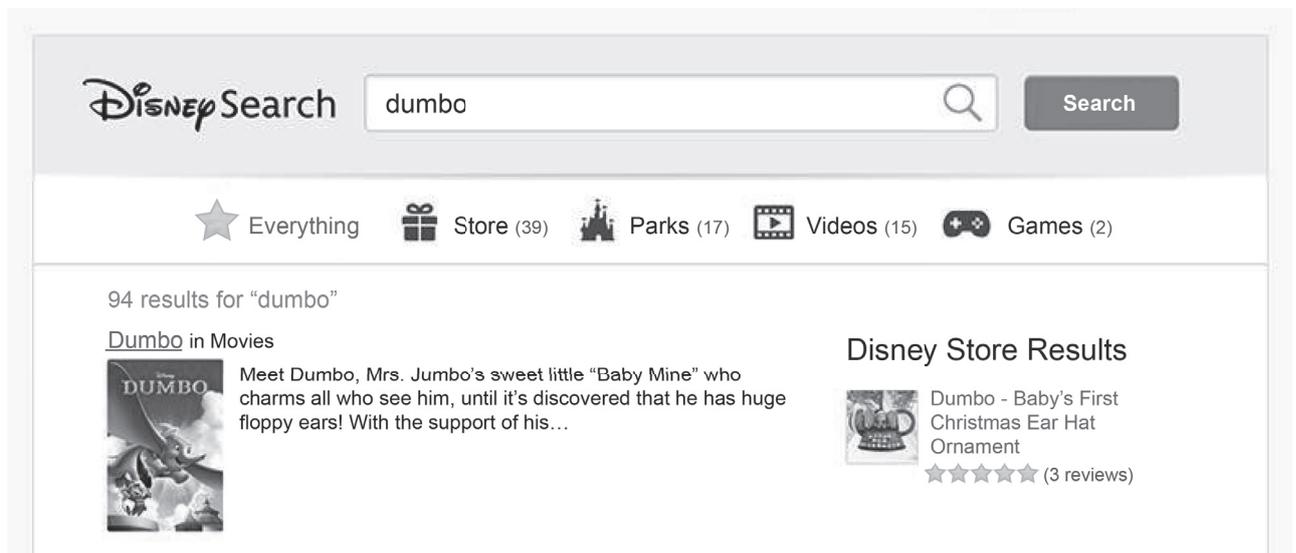
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(Question 1 continued)

(a)   (i)   Identify **two** advantages to parents if their children use the *Disney* search engine.   [2]

(ii)   Identify **two** ways that the authenticity of a user may be determined.   [2]

(iii) Identify **one** Boolean operator.   [1]

(iv)   State a Boolean search that would return the Mickey Mouse movies made in 1931.   [1]

(b)   (i)   Explain **two** reasons why the *Disney* search engine would use cookies.   [4]

(ii)   Explain **one** reason why the *Disney* search engine would use authenticity as the key factor in ranking a website.   [2]

(c)   Evaluate the decision by *Disney* to promote their search engine.   [8]

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2. **Restaurant automation**

Many restaurants in Hokkaido, Japan are installing "self-ordering" kiosks, as well as cell/mobile phone and tablet ordering systems. Automation is not new to retail; banks rely on automatic teller machines (ATMs), and grocery stores have used self-service checkouts for many years. In many of these restaurants the tablet systems also include games and opportunities to provide feedback.

A number of restaurants have joined together to provide the Hokkaido (HK) loyalty card, which offers discounts and other benefits to customers in restaurants in a number of locations. The data collected when customers sign up for and use the HK loyalty card programme is held by a third party. While customers may enjoy the benefits of the HK loyalty card programme it may have implications for their privacy, security and anonymity.

[Source: Based on Patrick Thibodeau, "Automation arrives at restaurants", ComputerWorld (2014)]

Figure 2: A customer ordering food at an automated restaurant

[Source: www.youngadultmoney.com]

(a) (i) Identify **two** types of data that would be input into the restaurant's self-ordering kiosk system by a customer. [2]

(ii) Outline **two** advantages to customers of the restaurant moving to a self-ordering kiosk or mobile ordering system. [4]

(b) Explain **three** reasons why a customer may be uncomfortable about sharing their personal information with a third party to obtain the HK loyalty card. [6]

(c) Discuss the advantages and disadvantages of restaurants joining the HK loyalty card programme. [8]

3.   Digital citizenship

The internet is used for for accessing, sending and exchanging information. It provides resources that would not be available otherwise. These include virtual libraries and multimedia resources.

The large amount of information on the internet means that students must decide what information they need and what they do not need. The quality of the information can also be questionable. Students must be taught how to distinguish between appropriate and inappropriate information. Since anyone can post online, it is almost impossible to control what can and cannot be published.

The statistics in **Figure 3** below show a significant increase in what teenagers posted online from 2006 to 2012.

Figure 3: Social media profiles – what teenagers post: 2006 versus 2012

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Please go to: http://www.pewinternet.org/2013/05/21/
teens-social-media-and-privacy

Universities, companies and individuals are able to see how students act on social networks. The increased posting of personal information suggests that students need to have a greater awareness of the concept of personal privacy, safe internet use and the need to comply with websites' terms and conditions.

There is a lot of discussion about what students should be taught within the digital literacy and digital citizenship curriculum. Creating an acceptable-use policy (AUP) is just one example of how schools can provide guidance to students.

[Source: adapted from www.venturebeat.com]

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(Question 3 continued)

    (a)   (i)   Define the term "digital citizenship". [2]

           (ii)   Identify the steps required to produce the chart in **Figure 3** using spreadsheet software. [4]

    (b)   (i)   Explain **one** benefit to students of learning about digital literacy in schools. [2]

           (ii)   Explain **two** characteristics of a website that can be used to determine whether it is a reliable source of information. [4]

    (c)   To what extent can a school's acceptable-use policy (AUP) ensure that students will become responsible digital citizens? [8]

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4.

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4.

(Question 4 continued)

(a)   (i)   Define the term "virtual reality". [2]

      (ii)   After an image of the shopper has been created, identify the steps the shopper would take when purchasing a dress using the "virtual dressing room" software. [4]

(b)   Analyse whether the software linked to the "virtual dressing room" should be made compatible with other platforms, such as *Apple*. [6]

(c)   Discuss the impacts on shoppers **and** local clothing shops of bringing the "virtual dressing room" into people's homes. [8]