DEPARTMENT OF COMPUTER SCIENCE
University of Toronto
CSC 454S/2527S: **THE BUSINESS OF SOFTWARE**

TERM TEST

1 April 2002, 7:10-8:40 p.m. (1 hour 30 minutes)

OPEN BOOK, OPEN COURSE NOTES

Write all your work in this booklet (15 pages in total).

NAME   _____

STUDENT # _____

Answer the following **twelve (12)** questions, based on
• what you have learned working on your business plan
• the course notes, texts, readings, and visitor presentations (see pages 14-15).

The exam is primarily short answer, with one essay. It requires an understanding of the major concepts conveyed in the course, and not a memorization of tiny details.

From the lecture notes, you can ignore the following pages:
3.32-3.33
4a.26-4a.27
4b.17-4b.19
5a.10-5a.13
5b.19-5b.25; 5b.30-5b.35
6.8; 6.10; 6.12-6.13; 6.15-6.16; 6.25-6.26
7.20-7.22
8.3-8.12; 8.29-8.30

Your answers should be as terse and crisp as possible. If you can't say it succinctly, excess verbiage won't help. In fact, it will hurt.

SKIM THE ENTIRE EXAM FIRST. Do not spend too much time on any one question.

Good luck.

SCORE   _____ OUT OF 100

(to be divided by 5, i.e., worth 20% out of 100% for the semester)

1. **(10 points)**
Which of the following statements (**select all that are true**) are true?

a) As technology products get more and more sophisticated, Rich and Gumpert would argue that successful start-ups must be technology-centred.

b) Rich and Gumpert stress the need for convergence among personal goals, corporate goals, and industry realities.

c) Brandt stresses the importance of recruiting enthusiastic amateurs to a management team in order to ensure a flow of fresh ideas.

d) Brandt suggests a process of business planning that includes activities throughout an entire year culminating in a business plan for the coming year.

e) Bell and McNamara stress the importance of members of the management team being able both to "do" and to manage.

f) A business plan motivated by the desire to build a perfect "Product X" which would be far better than any existing "product X" would be viewed favorably by Bell and McNamara.

g) Drucker would view the tragedy of Sept. 11 as a source of entrepreneurial opportunity.

h) Davidow stresses that start-ups will not reach their full potential if they limit their initial vision to only a modest market segment.

i) Seybold stresses that technology is the key to a successful Internet business.

j) McKenna stresses that product augmentations beyond the "expected product" are important sources of differentiation.

k) Welsh and White reassure us that achieving growth and profitability will ensure positive cash flow.

2. **(8 points)**
Which of the following statements (**select all that are true**) are true?
Note: You can make reference to the list of Guest Speakers on pages 14 and 15.

a) Ken Deaton of 3DNA Corp. presented a clear and compelling revenue model showing how he would turn his exciting 3D desktop interface technology into a viable business.

b) Roman Bodnarchuk of N5R.com, vendor of email direct marketing services, suggested a pricing strategy of "charging as much as you humanly can."

c) Louise Shekter of Visual Infinity seeks success for Grain Surgery through proprietary technology and distinctive competences both in computer graphics algorithm design and in an understanding of digital imaging markets.

d) Sensing that the marketplace for wireless software infrsatructure was about to explode, Greg Wolfond wasted no time planning once he determined to found 7/24 Solutions.

e) Elliot Noss of Tucows exploited a market window in launching a line of business focusing on domain name registration systems and services.

f) Khalil and Tom of GovWorks.com built a management team of individuals with demonstrated track records of success who had clear lines of responsibility and authority.

g) Lib Gibson of GlobeMedia Interactive described her firm as a content firm rather than a software firm.

h) Richard Wah Kan of DreamCatcher stated that his growth strategy was to increase his market share in the segment in which he has traditionally focused — PC adventure games.

i) Leila Boujnane of Idee Inc has leveraged a strong computer science background with on-the-job work experience in her personal growth as the CEO of their start-up.

_____

3. **(5 points)**
We have stressed the concept of having a carefully-defined, narrow focus for a start-up software company. Which of the following reasons (**select all that apply**) might nonetheless be thought of as excellent reasons for considering the addition of a second product?

a) There seems to be little competition for the second product.

b) The second product uses the same core technology as the first product.

c) The second product can be priced at twice the price of the current product.

d) The second product can be sold to existing customers as an add-on to the first product.

e) Many of your customers have expressed an interest in the second product.

4. **(5 points)**
The VP Technology of a start-up software firm has contributed the following paragraph to an annual report to shareholders. **Fill in the blanks** with the appropriate phrases:

As you know, our technology is based on _____ carried out at

the University of Toronto which is now available for us to exploit commercially through a

_____ agreement signed in January 2001.   In February-April 2001

we carried out a _____ exercise involving several key potential

customers and our marketing department. This helped us clarify how the technology could

be turned into a product. Following a detailed requirements and specification phase

completed in June of 2001, we began the rigorous application of _____

principles and methodologies to produce version 1.0alpha of the product. I am pleased to

report that this version was approved by our VP Marketing and our CEO last month, and we

are now in a _____ phase with ten potential customers.

5. **(7 points)**
The phrases identified by capital letters represent characteristics of software products. The phrases identified by small letters represent possible distribution channels for software products.

For each product characteristic, **pick the single distribution channel** (by circling a small letter representing the channel on the line corresponding to the product characteristic) that seems most suitable for a product with that characteristic. **Use each channel once and only once.**

A) Hardware device driver	a	b	c	d	e	f	g
B) Intended for horizontal market	a	b	c	d	e	f	g
C) Intended for vertical market	a	b	c	d	e	f	g
D) Very high price	a	b	c	d	e	f	g
E) Clear market demographics	a	b	c	d	e	f	g
F) Plug-in for Internet Explorer	a	b	c	d	e	f	g
G) Intended for continental Europe	a	b	c	d	e	f	g

a) Direct sales

b) Sales representative

c) OEMs

d) Distributors and retail outlets

e) Internet distribution

f) Mail order

g) VARs

_____

6. (**5 points**)
Your software company derives half of its income from the sale of services and half from the sale of products. Unfortunately, it is losing money, and the board has questioned the wisdom of having two lines of business. **Explain in 20-50 words** how the concepts of "break-even" and "profitability" could suggest that you abandon one line of the business.

7. (**5 points**)
Your company receives a $500,000 investment by a venture capitalist at the end of fiscal year 2002 in exchange for 20% equity in the company. The venture capitalist desires that his equity grow at 41% per annum, e.g., it should roughly double by the end of fiscal year 2004.

Assuming that your revenues and after-tax earnings are:

Fiscal Year	Revenues	After-tax Earnings
2002	$2,000,000	($ 250,000)
2003	$3,000,000	$ 50,000
2004	$5,000,000	$ 100,000
2005	$8,000,000	$ 300,000
2006	$10,000,000	$1,000,000
2007	$15,000,000	$1,500,000

Assume that you can go public at a valuation of 20 times after-tax earnings provided that you have completed at least 2 straight profitable years. Assume that you have received no other intervening investment. **When is the first time** (**at the end of which year**) that you can go public at a valuation that satisfies the venture capitalist's expectations. **Explain why in 10-20 words.**

8. **(5 points)**
Name two companies with complementary products and markets who visited the class this term that might be attractive candidates for a strategic alliance. **In 10-25 words each**, **explain why and describe the purpose of the alliance**.
Note: You can make reference to the list of Guest Speakers on pages 14 and 15.

_____ and _____

are attractive candidates for a strategic alliance with the purpose a) for the reasons b).

a) The purpose of the alliance would be to …

b) This makes sense for both firms because …

9. **(5 points)**
In 20-40 words, explain why many individuals who run software companies do not possess **both** effective **leadership** and **management** skills.

10. **(9 points)**
Silver speaks of solving a big "problem", Rich and Gumpert speak of "user benefit", and we have introduced the term "value proposition". All of these concepts suggest that a software business need to ensure that its technology provides real value to customers, that it helps reduce what George Adams refers to as "pain".

In **10-20 words each**, **describe** three methods for ensuring that you solve a real problem, mitigate pain, and provide user benefit with a winning value proposition.

Method 1

Method 2

Method 3

11. **(10 points)**
The dot.com, high-tech, and venture capital industry collapse has led to the virtual disappearance of early-stage venture capital.

In **10-20 words each**, **describe** two reasons why this is not as terrible as it may first seem.

a)

b)

Given the lack of venture capital, **describe,** in **10-20 words each**, the three most suitable methods for securing adequate capital for an early-stage software business.

c)

d)

e)

12. **(26 points)**
Consider a software business based on **face recognition software for security applications**.

Write a 10-15 sentence Executive Summary for such a business.

Make any assumptions you think are reasonable. Use fake names and placeholders for figures such as $xxxM where appropriate.

A few hints and instructions:
1) Spend the first 5 minutes on this question thinking, jotting down notes, organizing your approach, and outlining in bullet form the Executive Summary. Do this on this page.
2) Then write your Executive Summary on the next three pages.

THIS IS THE END OF THE EXAM.

PLEASE CHECK YOUR WORK.

BUSINESS OF SOFTWARE GUEST SPEAKERS FOR 2002

14 January
Ken Deaton is co-Founder, Chairman, and Visionary of **3DNA Corp.** (www.3dna.net), developers of a revolutionary 3D technology intended to enable the pervasive use of 3D on the desktop and throughout the digital world. After studying computer graphics and computer music at U of T and MIT, Ken started the 3D medical imaging company **ISG Technologies Inc**. (now **Cedara Software Corp.**) in 1981. As Vice President of Business Development, he led ISG from garage operation to public company. Since then, he has been engaged in a variety of innovative computer graphics, digital video, and computer holography projects for clients such as David Cronenberg and IMAX.

21 January
"'Loyal clients are just an e-mail away', says Roman Bodnarchuk, the maverick behind online campaigns for Intrawest and the Backstreet Boys." Bodnarchuk is Chairman and CEO of **N5R.com** (www.n5r.com) (originally named Net Results Internet Advertising Inc.), which he founded in 1995. His vision has resulted in one of the world's most advanced digital marketing firms and Canada's premier provider of online marketing solutions. Roman oversees new business development, strategic planning, sales and marketing.

28 January
Louise Shekter, President of **Visual Infinity**, (www.visinf.com), is a Business of Software alumni. She has over 15 years of experience in the film and television industries as a Producer and Director, and also holds a degree in Software Engineering from U of T. Visual Infinity Inc. was founded in 1996 to produce cutting edge, innovative graphics software. Their software is currently used worldwide in film and video special effects and motion graphics production. Partners and clients include SGI, Alias|Wavefront, and Adobe Systems.

4 February
Greg Wolfond is Chairman and Co-Founder of **7/24 Solutions**, (www.724.com). Greg co-founded 7/24 with Chris Erickson in 1997 to conceive, design and deliver an Internet infrastructure software solution to financial institutions that enables them to offer personalized and secure on-line banking, brokerage and e-commerce services across a wide range of Internet-enabled wireless and consumer electronic devices. Greg guided 724 Solutions through one of Canada's most successful IPO listings and grew the company from two to over 350 employees, before handing off the CEO position so that he could focus on designing and driving the strategic direction of 7/24 Solutions. Previously, Greg was founder and CEO of Footprint Software Inc., a highly successful financial services software company specializing in object-oriented financial technologies, which he sold to IBM in May of 1995.

11 February
Elliott Noss is President and Chief Executive Officer of **Tucows** (www.tucows.com). Tucows Inc. is an Internet channel management company providing wholesale digital products to Internet service providers and web hosting companies on a global basis. Launched in 1993 as a software download site, Tucows is now a leading wholesale domain name registrar with a network of more than 5,000 resellers in more than 100 countries. Noss, originally trained as a lawyer, arrived at Tucows in 1997 as Vice President of Corporate Services after a stint working in the ISP business. He later led the new company through its acquisition by STI Ventures and was appointed President and CEO of Tucows Inc. in May 1999.

11 March
Lib Gibson is President and CEO of **Bell Globemedia Interactive** (www.globeinteractive.com), which operates all new media initiatives across the divisions of Bell Globemedia. Ms. Gibson oversees Sympatico-Lycos, Canada's leading portal; the #1 Canadian Web properties in news (globeandmail.com), sports (tsn.ca), jobs (workopolis.com), finance (globeinvestor.com), automotive (globemegawheels.com), local (toronto.com); as well as a number of other Globemedia sites. Previously, Gibson was President and CEO of Globe Interactive. She sees the future of on-line news and information as a sector in which Canadians can excel. Last year Ms. Gibson was named an Internet Pioneer at the 2000 Canadian New Media Awards.

18 March

Richard Wah Kan is President of **DreamCatcher** (www.dreamcatchergames.com).   DreamCatcher launched its first title in 1996, with a small band of people who believed in providing customers with quality entertainment software at affordable prices. Since that time, DreamCatcher has become one of the most successful small-sized publisher in the entertainment software industry, and was the fastest growing publisher in 2000, growing over 800% according to PC Data. In March 2000, Cryo Interactive Entertainment acquired a majority stake in DreamCatcher. DreamCatcher now acts as Cryo's publishing arm in North America.

25 March

Leila Boujnane is the Founder and CEO of **Idée Inc** (www.ideeinc.com). Idée is a software development firm specializing in visual search and comparison technologies. Their flagship product Espion is a visual comparison engine which can be used as an add-in to enhance digital asset management applications. Idée is in the business of making visual search part of today's technology applications. In September 2001, Idée, together with its partner Canto Cumulus, received one of 23 coveted Seybold Editors' Hot Pick awards at Seybold San Fransisco.