Software Development

Unit 1 – Software Development Concepts Presentations

Name _____

01 Binary Numbers - Video

1. The number "1" represents the _____ electric signal.
2. The number "0" represents the _____ electric signal.
3. The place values for the first four places in a binary number are

_____ _____ _____ _____

4. What are the following binary numbers?

0000 _____	0101 _____	1010 _____
0001 _____	0110 _____	1011 _____
0010 _____	0111 _____	1100 _____
0011 _____	1000 _____	1101 _____
0100 _____	1001 _____	1110 _____
		1111 _____

5. What is the largest number you can make with a four-bit number? _____
6. What are these binary numbers?

10010 _____	10101 _____	11010 _____
10001 _____	00010 _____	11011 _____

7. Write these decimal numbers in binary

6 _____	15 _____	31 _____
7 _____	16 _____	32 _____

8. What is the ASCII number for the character "A"? _____

02 How a CPU works

1. Who are two manufacturers of CPUs? _____
2. Where does the CPU get data from? _____
3. What does RAM stand for? _____
4. RAM consists of two lists of numbers:
   _____ and _____
5. What wire does the CPU turn on when it wants to read from memory? _____
6. What wire does the CPU turn on when it wants to write to memory? _____
7. What four types of data are stored in RAM?
   _____
8. What are eight of the instructions that the CPU can do?
   _____ _____ _____ _____
   _____ _____ _____ _____
9. What does the control unit do? _____
10. What does the ALU unit do? _____
11. What is a register? _____
12. What is a bus and what does it do? _____
    _____
13. What happens to the data in RAM when the power is shut off? _____
14. Where is data stored when the computer is powered off?
    _____

03 Programming Languages

1. What is a programming language? _____
   _____
2. What are four names of common languages? _____
   _____ _____ _____
3. What is the lowest level of programming? _____
4. What is the language of CPU instructions? _____
5. What does the process of compiling do? _____
   _____
6. What was the first compiled high-level language? _____

7. What is the main advantage of a bytecode language like Java that runs on a virtual machine? _____
_____
8. Name three advantages of an interpreted language _____
_____
9. Name three advantages of a compiled language _____
_____
10. Why was the visual programming method invented? _____
_____
11. What is HTML/CSS used for? _____
12. What is SQL used for? _____
13. What is XML used for? _____
14. What is JSON used for? _____

04 Types of Programming Languages

1. What languages can be used to create a Windows PC application? _____
2. What languages can be used to create a Macintosh application? _____
3. What languages can be used to create a Web-based application? _____
4. What languages can be used to create a Windows PC application? _____
5. What languages can be used to create an Android application? _____
6. What languages can be used to create an iPhone or iPad application? _____
7. Increasingly, what is JavaScript being used to build? _____
8. What languages can be used to create a server back-end application? _____
9. What languages can be used to create an embedded application? _____

05 Software Licensing

1. What category of software would you classify these programs?
Microsoft Excel _____
Adobe Photoshop _____
Firefox _____

2.   What free alternatives exist for these programs?

Microsoft Windows _____
Microsoft Office _____
Adobe Photoshop _____
Adobe Illustrator _____

3.   Why would someone pay for commercial software when there are free alternatives? _____

06 Software Life Cycle

What are the six phases of software development?
  1. _____
  2. _____
  3. _____
  4. _____
  5. _____
  6. _____

07 IT Careers

Four general categories for IT careers include

  i. _____
  ii. _____
  iii. _____
  iv. _____
  v. Which career track would lead you to do each of these activities?

a. Manage a server _____

b. Program an operating system _____

c. Design database tables for an application _____

d. Design a new computer component _____

Use the following link
- http://money.usnews.com/careers/best-jobs/rankings/best-technology-jobs
- http://www.bls.gov/ooh/computer-and-information-technology/home.htm
- Compare four careers and fill in the following table:

Career	Salary Range	Amount of Education Needed	Number of Jobs in USA	Job Growth % Estimate
Computer Support Specialist				
Web Developer				
Computer Systems Analyst				
Database Admin				

College Career Exercise

Choose two of the programs of study below and make a list of required classes in the table

Web and Graphic Design
https://aztransmac2.asu.edu/cgi-bin/WebObjects/acres.woa/wa/freeForm3?id=63317
Programming and Mobile Development

https://aztransmac2.asu.edu/cgi-bin/WebObjects/acres.woa/wa/freeForm3?id=83468
Computer Programming
https://aztransmac2.asu.edu/cgi-bin/WebObjects/acres.woa/wa/freeForm3?id=26042
Computer and Network Technology
https://aztransmac2.asu.edu/cgi-bin/WebObjects/acres.woa/wa/freeForm3?id=47189
Database Development
https://aztransmac2.asu.edu/cgi-bin/WebObjects/acres.woa/wa/freeForm?id=24226

1.	2.
Required core classes…	Required core classes…

- Which degree looks easiest? _____
- Which degree looks more interesting to you? _____

08 Security and Encryption

1. The symbol in the URL that tells you the computer is using encryptiong is _____
2. What does VPN mean? _____
3. A _____ is a program that checks packet source and destination before allowing them in or out of a computer.
4. A _____ makes internet requests for clients, hiding the IP address of the client.
5. A _____ is when a user executes unauthorized database code.
6. _____ should not be permitted input for general purpose data forms on a web page.
7. Passwords more than _____ letters are considered secure.

Password Cracking Exercise

Complete the password cracking 101 page at

http://www.studyoffice.org/index.php?option=com_content&view=article&id=33:password-cracking-101&catid=19&Itemid=187

8. How much time did the computer take to crack each of these password lengths?
    a. 5 characters_____
    b. 6 characters_____
    c. 7 characters_____
    d. 8 characters_____

09 IBM Century of Innovation

https://www.youtube.com/watch?v=39jtNUGgmd4

1. 1915 Who is the company president? _____
2. 1931 What was the main method for storing data? _____
3. 1936 What government project did IBM implement? _____
4. 1940 What electronic device is used? _____

5. 1948 What could the Selective Sequence Electronic Calculator do for the first time? _____
6. 1957 What programming language was invented? _____
7. 1962 What did the SABRE system do? _____
8. 1963 What system did IBM create as the largest corporate research project to date? _____
9. 1966 What memory device was invented? _____
10. 1969 What government project did IBM help with? _____
11. 1972 What consumer device was invented? _____
12. 1973 What consumer device was invented? _____
13. 1976 What consumer device was invented? _____
14. 1981 What consumer device was invented? _____