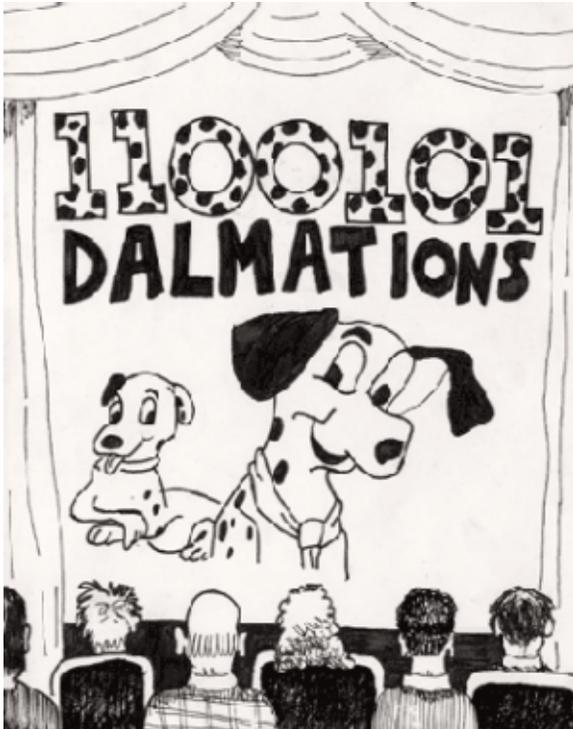


NAME: \_\_\_\_\_

This is an example of questions pulled from other exams. Some of the questions might ask things specific to a given semester and not be relevant to your semester.



Film Night at the Binary Society

(a) The binary name of a movie.



(b) Ok, the kid is right, but what if he got the answer 39 in decimal?

Figure 1: For problems 1 and 2.

- (20 pts) In this compute what the name of the movie is in figure 1a in decimal, but be sure to show all your work! It is the computation not the answer that counts.

2. ( 20 pts ) The correct answer for the problem on the chalkboard in figure 1b is 49. So the binary is right. Suppose the kid misadded and got 39? What is 39 in binary? Be sure to show all your work!

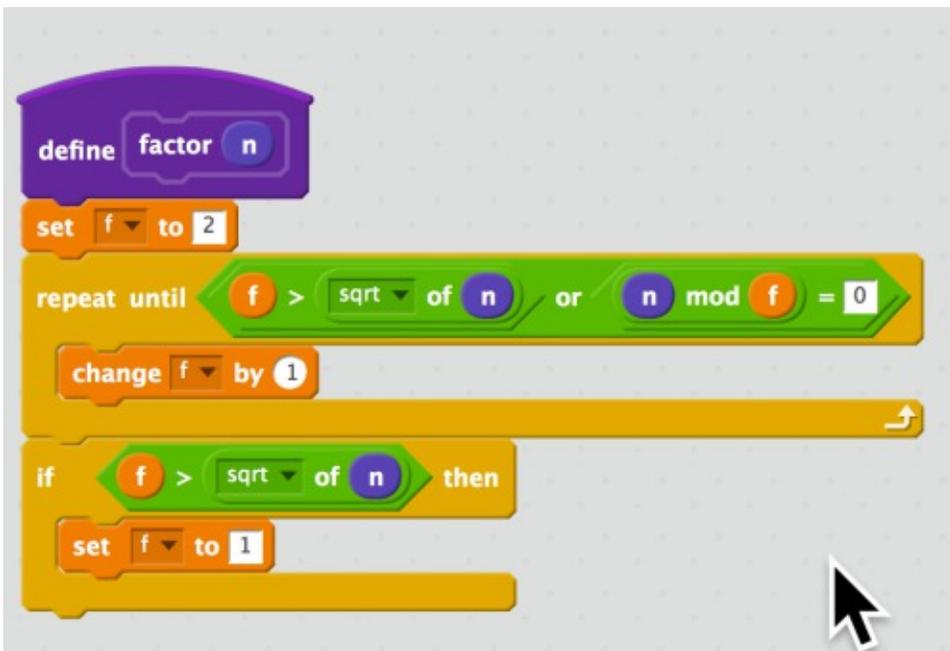
3. ( 15 pts )

On the TV show "Big Bang Theory" Sheldon says: "The best number is 73. Why? 73 is the 21<sup>st</sup> prime number. Its mirror, 37, is the 12<sup>th</sup> and its mirror, 21, is the product of multiplying 7 and 3... and in binary 73 is a palindrome,..." What is 73 in binary? Show your work.

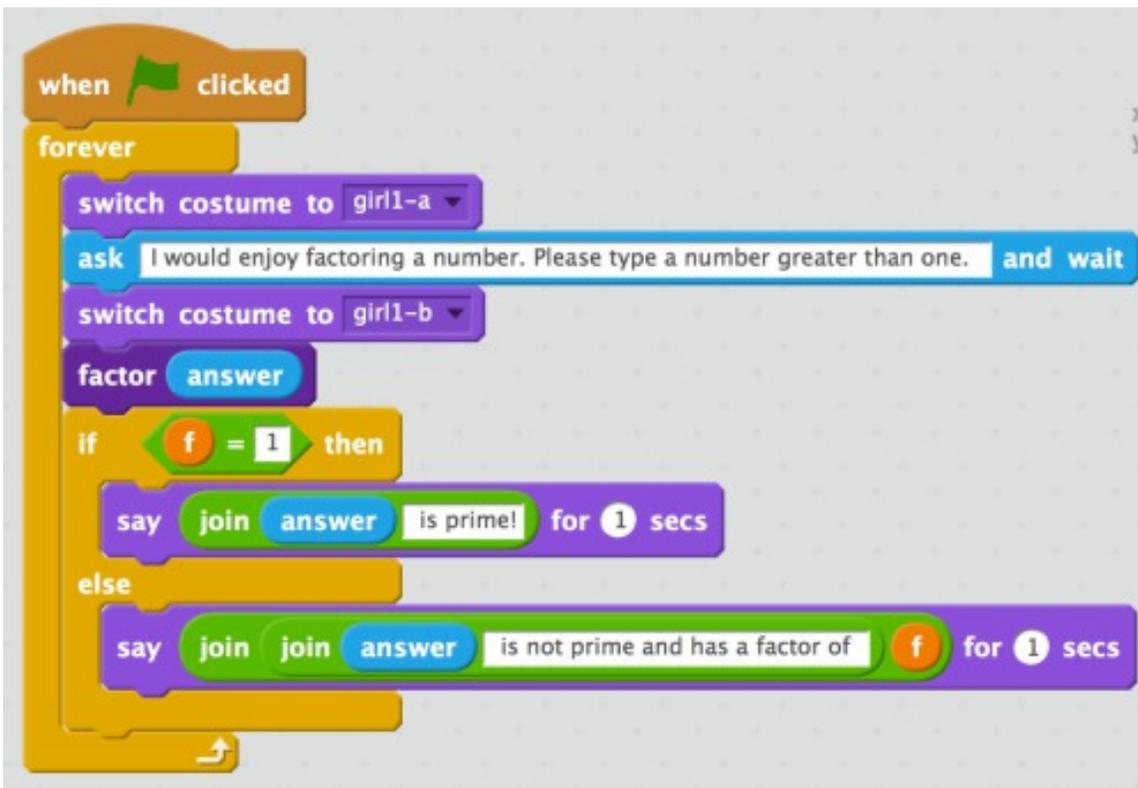
4. ( 15 pts ) Binary is the way numbers are stored on electronic digital computers we use today. What is 1000100101 in decimal?

5. ( 10 pts ) In decimal what is the largest binary number you can store 8 bits?

6. ( 20 pts ) These are questions about this code:

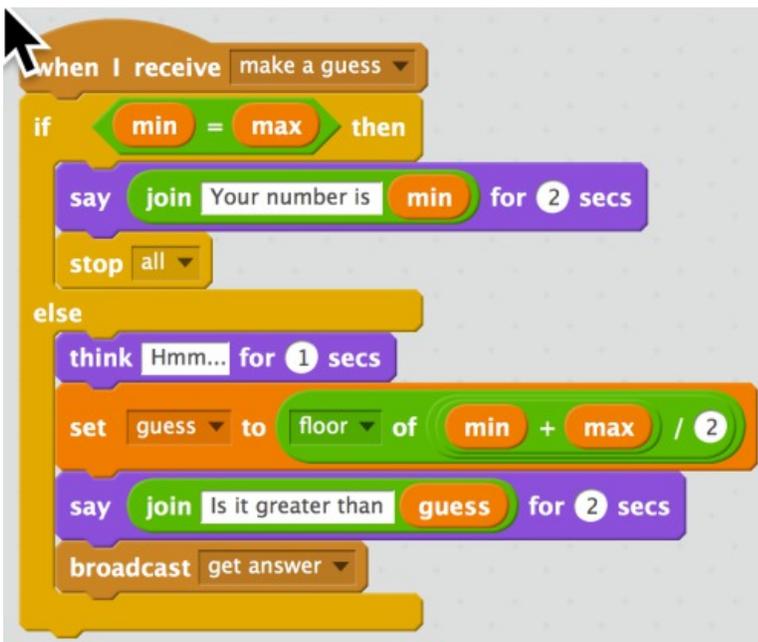


- a) What is the purpose of this code?
  - b) What is the purpose of the **define** block (NOT what is the purpose of all of this code)?
  - c) Is n local or global?
  - d) Is f local or global?
  - e) What is the purpose of the **mod** operator?
  - f) How does this code return an answer?
  - g) What is f set to if n is prime?
7. ( 20 pts ) These are questions about this code which is slightly modified from what we saw in the course.



- What is the name of the variable that contains the number to be factored?
- If the number is factored, what variable contains the factor?
- What happens after it prints that the number is prime and waits a second?
- Why do we switch costumes for the girl in two places?

8. ( 20 pts ) This code is for the dinosaur guessing game.



a) What does the if statement test? Why?

b) What is the purpose of the **set guess** block? Why that computation?

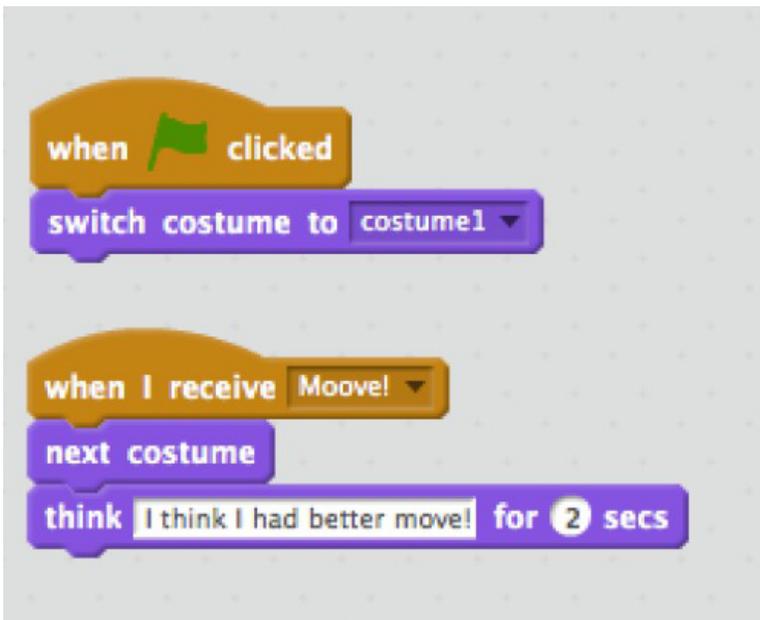
9. ( 30 pts ) Short answer. Be clear and not vague!

a. In Scratch programming what is a sprite?

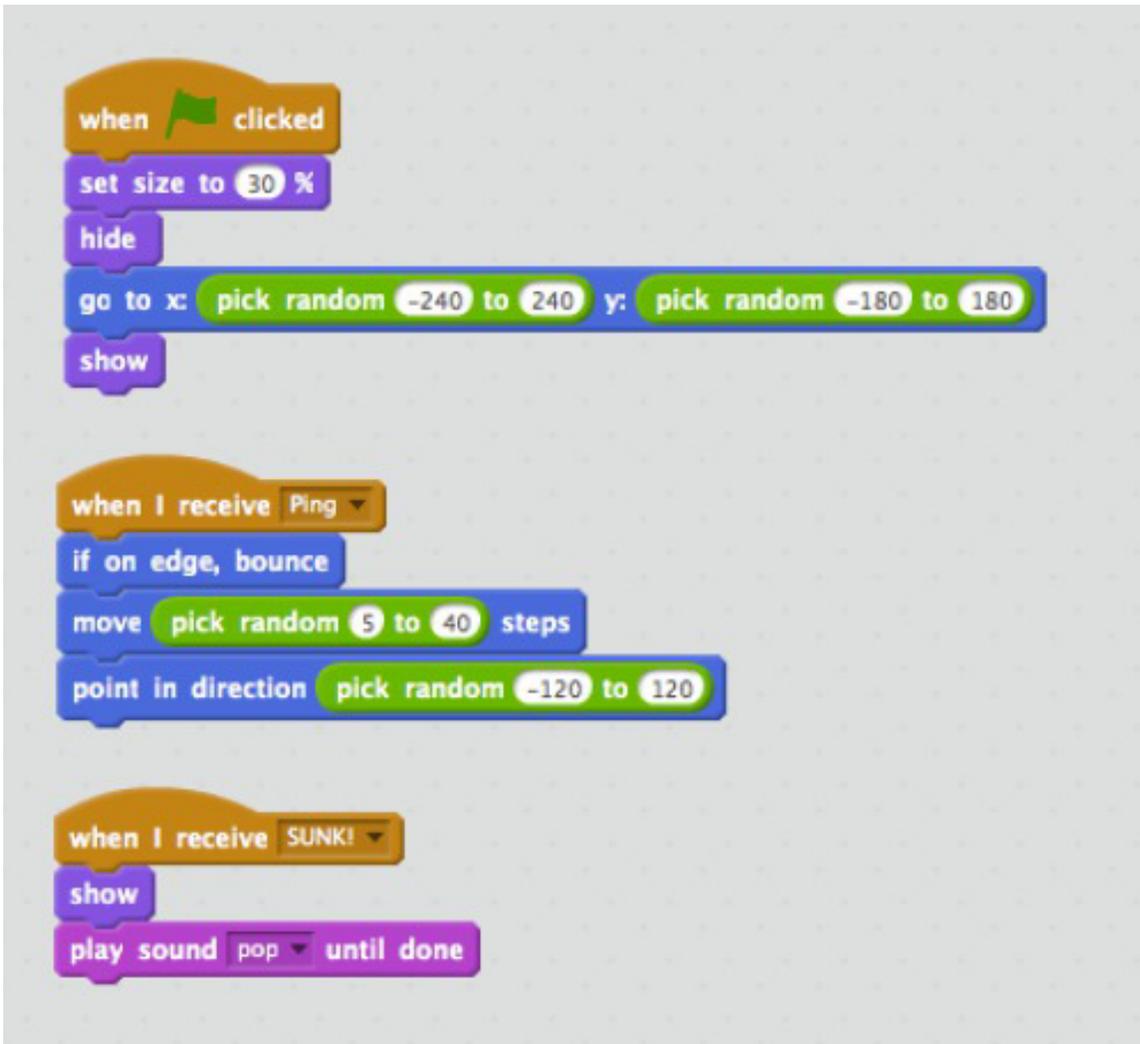
b. In Scratch programming what is a costume?

c. What is an execution thread?

10. ( 40 pts ) For the following Scratch code tell me what the program behavior is when I press the green flag. Be complete!!! Being vague will not help you. Write next to the code.

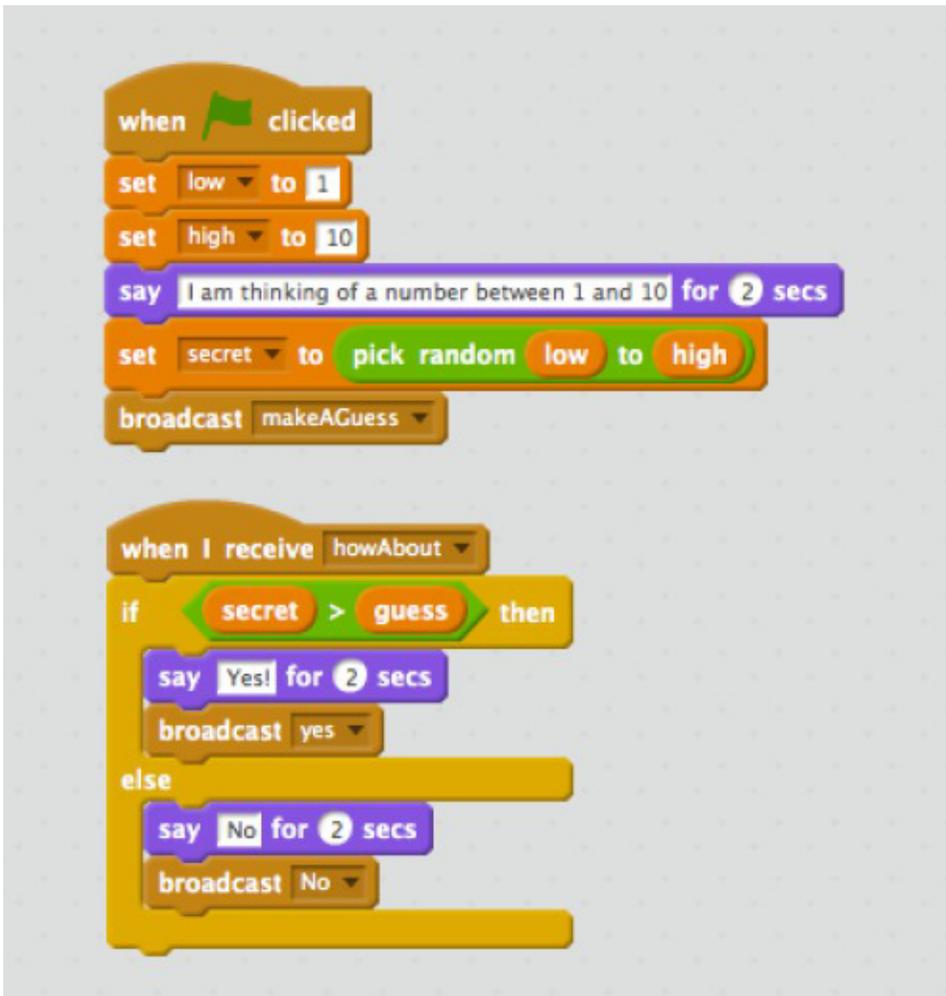


11. ( 40 pts ) For the following Scratch code based on what we have seen before tell me what the program behavior is of each script. Be complete. What program was this?



12. ( 40 pts ) Below is from the code for the two dinosaurs playing a game.

- a. Is secret a global or a local?
- b. Is guess a global or a local?
- c. What **exactly** happens when the “say” command is executed. Think back to what you see or hear.
- d. In that program which sprites listen to the messages that are broadcast?



13. ( 10 pts ) From “This week in computer science”: What is a LAWS? What kind of things shipped using drones in Africa?
14. ( 80 pts) For the following definitions label them with the best term from the list below.
- \_\_\_ The base 8 number system. It is often used to express binary numbers in shorter strings.
  - \_\_\_ A standard for communication between pieces of hardware or between pieces of software that allows information and commands to be exchanged.
  - \_\_\_ The main path for bits traveling in parallel in and out of a CPU. It is often many bits wide.
  - \_\_\_ An unmanned flying vehicle, for example a UAV. May be remote controlled or autonomous.
  - \_\_\_ This refers to information being stored not on one’s own computer but on a distant mass storage device accessible via the internet.
  - \_\_\_ A physical device used by a computer that is not part of the physical box containing CPU and memory. A printer is an example.
  - \_\_\_ It is a 7bit code for characters. For example: the letter ‘x’ is represented as 1111000.
  - \_\_\_ A billion
  - \_\_\_ A language that is NOT similar to the one that runs on the hardware and deals more complex data types and control structures than the hardware.
  - \_\_\_ Controlled by computer programs and not people
  - \_\_\_ A software tool to help you write software. Examples include the open source: Eclipse and NetBeans and Microsoft Visual Studio.

- Using algorithms to infer complex results for masses of data such as sensor data or the world's web pages. Generally to be data mining most of the data available is not relevant but large enough amounts are that it is nontrivial to draw conclusions.
- Fairly splitting up time between running processes.
- Refers to the volume of information that can be transmitted or processed. It is usually measured in bits or bytes per time unit like "bits per second".
- Generally refers to fast memory on chips that are not in the CPU. It often stores data that is anticipated to be used next or recently used
- The program that runs on the hardware creating information objects such as files and processes and assures the fair and secure allocation of processor time for processes, access to files, access to devices, and other resources.
- The subfield of computer science that involves the creation of programs that attempt to do what was formerly believed to be able to be done by humans.
- The field of Computer Science that deals with algorithms, techniques and hardware that enables simultaneous execution of many streams of instructions.
- A trillion
- The main circuit board generally connecting most major components of a computer such as CPU, memory, I/O devices.
- A million
- A variable that is accessible from anywhere in the code.
- A collection of variables and functions brought together in a programming system to represent a physical thing.
- A set of instructions for accomplishing a task that when executed will terminate.
- The set of loyal customers a company or software supplier supports.
- Code that changes the order of execution.
- Using algorithms to infer complex results for masses of data such as sensor data or the world's web pages.
- The number of cycles or oscillations per second. Computer clock rates are measured in this.
- The internal "drummer" or heartbeat that keeps the CPU activities across the chip and across the motherboard in sync.
- A string of 0's and 1's that represents information such as a number or characters.
- A single letter or symbol that is represented by a small set of bytes in the computer. As in ASCII or Unicode.
- It is about 1 foot per billionth of a second.
- a billionth or a very small thing.
- Owned by an individual or company and whose use generally requires payment.
- The processor for a computer.
- the rules to decide only if a statement is allowed in the language but not what the meaning of the statement is.
- The instructions executed by a CPU. The bit level instructions of a computer.
- A number that allows a decimal point for example: 3.14159265358979
- The meaning of statements in a language.
- A program that spends most of its time running on the CPU with a disproportionately small amount of time waiting for data from memory.

1. ASCII
2. Algorithm
3. Artificial Intelligence
4. Atomic Clock
5. Autonomous
6. Bandwidth
7. Big Data
8. Binary
9. Bus
10. Byte
11. CPU
12. CPU intensive
13. CUDA
14. Character
15. Clock
16. Cloud
17. Control structure
18. Crypto-memory
19. Customer Base
20. Data Mining
21. Disk
22. Drone
23. Floating Point Number
24. Giga-
25. Global Variable
26. Hertz
27. Hexadecimal
28. High Level Language
29. IDE
30. Integer Point Number
31. Kilo-
32. Local Variable
33. Machine Instructions
34. Mega-
35. Micro-
36. Motherboard
37. Nano-
38. Object
39. Octal
40. Omicron Persei 8
41. On Chip
42. Operating System
43. Pairs Programming
44. Parallel Computing
45. Peripheral
46. Proprietary
47. Protocol
48. Quantum Computing
49. RAM
50. Semantics
51. A Small Bunny
52. Software
53. Solid state disk
54. Speed of Light
55. Syntax
56. System Variable
57. Systematics
58. Tera-
59. Time sharing