Information you may find useful

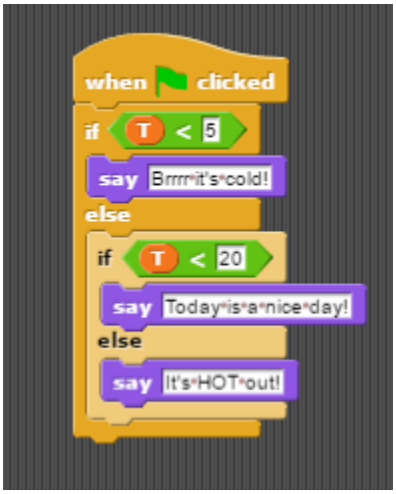
Powers of two

2^9	2^8	2^7	2^6	2^5	2^4	2^3	2^2	2^1	2^0
512	256	128	64	32	16	8	4	2	1

Hexadecimal digits

Binary representation	**Decimal representation**	**Hexadecimal representation**
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7
1000	8	8
1001	9	9
1010	10	A
1011	11	B
1100	12	C
1101	13	D
1110	14	E
1111	15	F

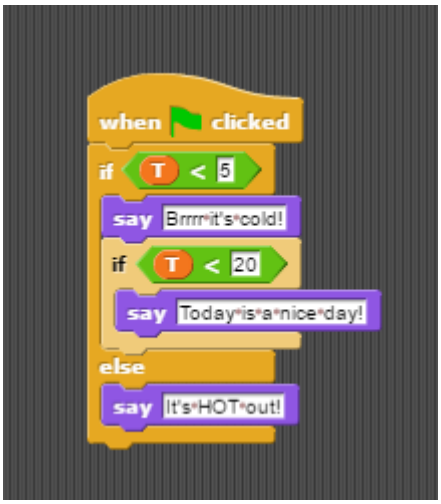
Problem 1: Multiple Choice – circle the correct answer [1 mark]



i. Circle the algorithm that is equivalent to the one above

a.

b.



c.

d.

e. None are equivalent.

Try stepping through each one using different values for T, such as 4, 15, and 25!

A: If a value is less than 5 it will also evaluate true for (T < 20). The sprite would say Brrr it's cold! AND Today is a nice day!
B: If a value were less than 5, it would never make it to the second IF statement (T < 5) since it is embedded within the ELSE statement. This is also called "dead code".
C: Similar to A but not the same. If a value were between 5 and 20, such as 15, it would not even get to say "Today is a nice day!"
D: If T was 15, then the sprite would say "Today is a nice day!" and also "It's HOT out!"

Since none of these are equivalent, the answer must be E!

Problem 2: True or False

Circle the correct answer to each question

Liability is a big stumbling block in creating a driverless car	True	False
Any type of graph is equally suited for expressing any type of information	True	False
A line graph is well suited for showing population growth over a range of years	True	False
A pie graph is well suited for showing test scores in a class	True	False
Cloud computing refers to the ability to store information wirelessly	True	False
One example of an association rule is that people who buy diapers tend to buy beer	True	False
Computer animated movies tend to have more realistic treatment of light than hand animated movies	True	False

Problem 3: Define this [2 marks]

Expand the following acronyms to their full version as discussed in class. Note that adding additional definitions may result in your losing points

a. IR – information retrieval

b. NLP – natural language processing

Problem 4: Number conversion [2 marks]

a. [2 marks] Translate the following hexadecimal number to binary: CAFE1

1100101011111100001

Problem 5: Artificial Intelligence [4 marks]

a. Given what we have learned in class, which job below is more likely to be automated? Why?
   Paralegals
   Singers

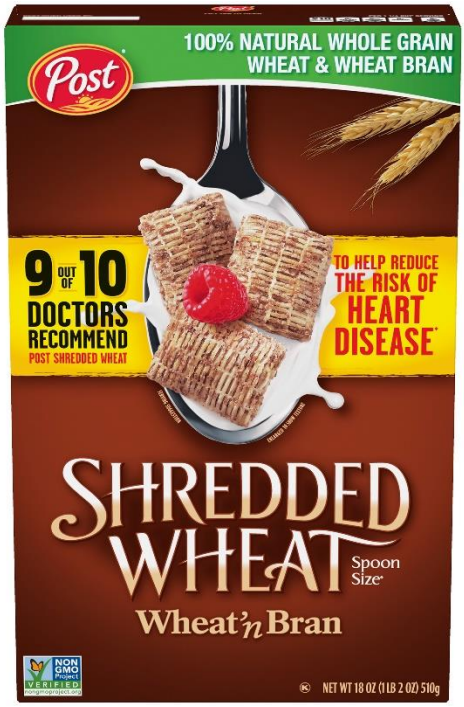
Paralegals are much more likely to be automated because the job is highly involved in processing information without judgement calls. Singers are less likely to be automated because individual nuances are important in judging singers rather than (only) the ability to hit the right notes at the right time.

b. Is it likely that all our jobs are going to be taken over by robots? Why or why not?

No, it is very unlikely. There are many jobs that require human-level intelligence and also decision making capabilities or creativity that computers and robots are unlikely to do adequately in the foreseeable future, if ever.

Problem 6 [2 marks]

Is the following advertisement potentially misleading? Why?



Yes, this is potentially misleading because it's unclear what sample set the 9 out of 10 doctors is taken