Q: Convert the following hexadecimal sequence to ASCII: 53 54 41 52 53

iClicker

A. STARS

B. 56)45

C. !@#$$

D. HELLO

E. WORLD

Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char	Decimal	Hex	Char
0	0	[NULL]	32	20	[SPACE]	64	40	@	96	60	`
1	1	[START OF HEADING]	33	21	!	65	41	A	97	61	a
2	2	[START OF TEXT]	34	22	"	66	42	B	98	62	b
3	3	[END OF TEXT]	35	23	#	67	43	C	99	63	c
4	4	[END OF TRANSMISSION]	36	24	$	68	44	D	100	64	d
5	5	[ENQUIRY]	37	25	%	69	45	E	101	65	e
6	6	[ACKNOWLEDGE]	38	26	&	70	46	F	102	66	f
7	7	[BELL]	39	27	'	71	47	G	103	67	g
8	8	[BACKSPACE]	40	28	(	72	48	H	104	68	h
9	9	[HORIZONTAL TAB]	41	29	)	73	49	I	105	69	i
10	A	[LINE FEED]	42	2A	*	74	4A	J	106	6A	j
11	B	[VERTICAL TAB]	43	2B	+	75	4B	K	107	6B	k
12	C	[FORM FEED]	44	2C	,	76	4C	L	108	6C	l
13	D	[CARRIAGE RETURN]	45	2D	-	77	4D	M	109	6D	m
14	E	[SHIFT OUT]	46	2E	.	78	4E	N	110	6E	n
15	F	[SHIFT IN]	47	2F	/	79	4F	O	111	6F	o
16	10	[DATA LINK ESCAPE]	48	30	0	80	50	P	112	70	p
17	11	[DEVICE CONTROL 1]	49	31	1	81	51	Q	113	71	q
18	12	[DEVICE CONTROL 2]	50	32	2	82	52	R	114	72	r
19	13	[DEVICE CONTROL 3]	51	33	3	83	53	S	115	73	s
20	14	[DEVICE CONTROL 4]	52	34	4	84	54	T	116	74	t
21	15	[NEGATIVE ACKNOWLEDGE]	53	35	5	85	55	U	117	75	u
22	16	[SYNCHRONOUS IDLE]	54	36	6	86	56	V	118	76	v
23	17	[END OF TRANS. BLOCK]	55	37	7	87	57	W	119	77	w
24	18	[CANCEL]	56	38	8	88	58	X	120	78	x
25	19	[END OF MEDIUM]	57	39	9	89	59	Y	121	79	y
26	1A	[SUBSTITUTE]	58	3A	:	90	5A	Z	122	7A	z
27	1B	[ESCAPE]	59	3B	;	91	5B	[	123	7B	{
28	1C	[FILE SEPARATOR]	60	3C	<	92	5C	\	124	7C	|
29	1D	[GROUP SEPARATOR]	61	3D	=	93	5D	]	125	7D	}
30	1E	[RECORD SEPARATOR]	62	3E	>	94	5E	^	126	7E	~
31	1F	[UNIT SEPARATOR]	63	3F	?	95	5F	_	127	7F	[DEL]

CPSC 100

Computational Thinking

Data Representation in Action

Instructor: Parsa Rajabi
Department of Computer Science
University of British Columbia

Agenda

- Invitation for Research Study
- Course Admin
  - AI Disclosure Form
  - Course check-in survey
- Learning Goals
- Data Representation *in Action*
- Midterm Grades

Research Study

Study Title: Has the clubhouse been unlocked? Exploring experiences of women and non-binary students in computer science education

Investigators: Dr. Susan Gerofsky (Associate Professor, Faculty of Education), Erica Huang (PhD Candidate, Faculty of Education)

Goal: To better understand the CS education experiences of women and non-binary students in first-year CS classes

What's involved?

✅ **Pre-interview survey** (~10 mins)

✅ **In-person interview on campus – Wed. March 19** (<1 hour)

(with flexibility to make alternative arrangement)

✅ **Optional follow-up interview on Zoom** (< 30 mins)

Contact: Erica Huang (eythuang@student.ubc.ca)

Link to pre-interview survey:

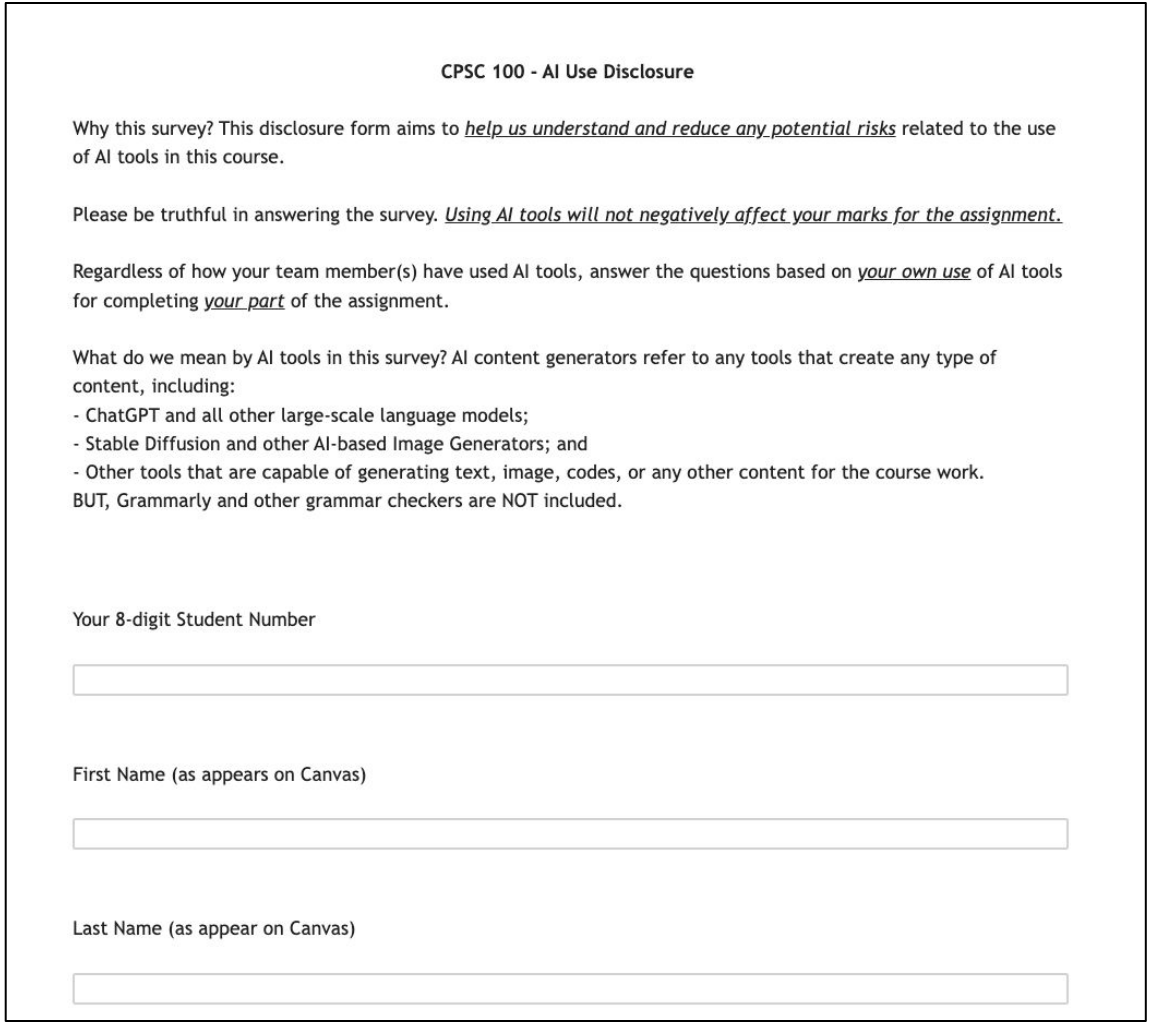
Contact: Erica Huang (eythuang@student.ubc.ca)

Course Admin

Course Admin

- **This week's Lab:** Project Milestone 2
  - Due Wednesday, March 12, 11:59pm
  - **[New!]** *AI Disclosure Form*
- **PC Quiz 5**
  - Due Sunday, March 16, 11:59pm
- **Final Exam**
  - Tuesday, April 22, 7pm; Location TBA

Project AI Disclosure Form



CPSC 100 - AI Use Disclosure

Why this survey? This disclosure form aims to *help us understand and reduce any potential risks* related to the use of AI tools in this course.

Please be truthful in answering the survey. *Using AI tools will not negatively affect your marks for the assignment.*

Regardless of how your team member(s) have used AI tools, answer the questions based on *your own use* of AI tools for completing *your part* of the assignment.

What do we mean by AI tools in this survey? AI content generators refer to any tools that create any type of content, including:
- ChatGPT and all other large-scale language models;
- Stable Diffusion and other AI-based Image Generators; and
- Other tools that are capable of generating text, image, codes, or any other content for the course work.
BUT, Grammarly and other grammar checkers are NOT included.

Your 8-digit Student Number

First Name (as appears on Canvas)

Last Name (as appear on Canvas)

Link to Form

Each student submits their own disclosure

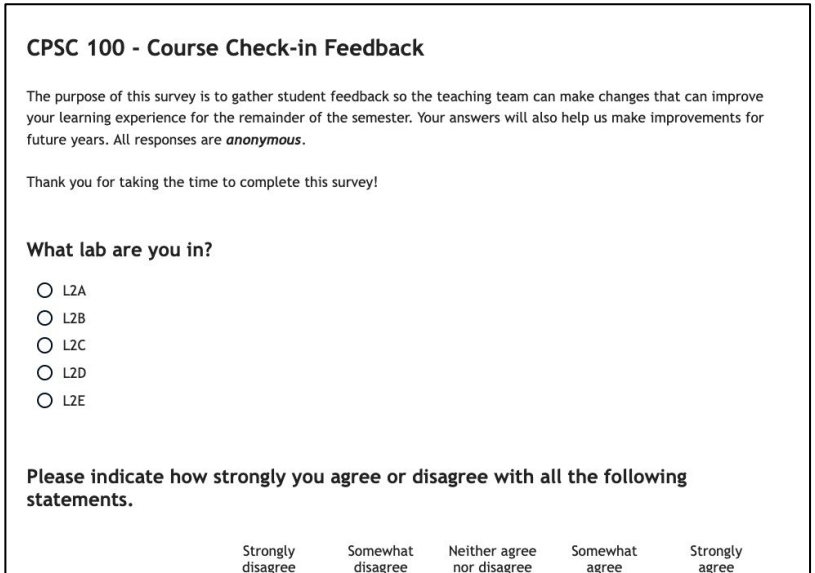
No submission? 10% penalty applied

Also available via Canvas > CPSC 100 > Scroll down to project section

Course Check-in Survey

Course Check-in Survey

- Please fill out the anonymous survey below to provide your thoughts on the course thus far. Your feedback will be used to improve the course!
- https://ubc.ca1.qualtrics.com/jfe/form/SV_26a4t2Ppcw6mJ6u



CPSC 100 - Course Check-in Feedback

The purpose of this survey is to gather student feedback so the teaching team can make changes that can improve your learning experience for the remainder of the semester. Your answers will also help us make improvements for future years. All responses are ***anonymous***.

Thank you for taking the time to complete this survey!

What lab are you in?

- ○ L2A
- ○ L2B
- ○ L2C
- ○ L2D
- ○ L2E

Please indicate how strongly you agree or disagree with all the following statements.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree

Learning Goals

Learning Goals

After this **today's lecture**, you should be able to:

- Understand how colours are represented in the RGB model
- Describe how RGB colours are stored and represented in computing.
  - Recognize that each colour (R, G, B) has 256 intensity levels (0-255).
- Convert between different RGB representations: Decimal, Binary, & Hex

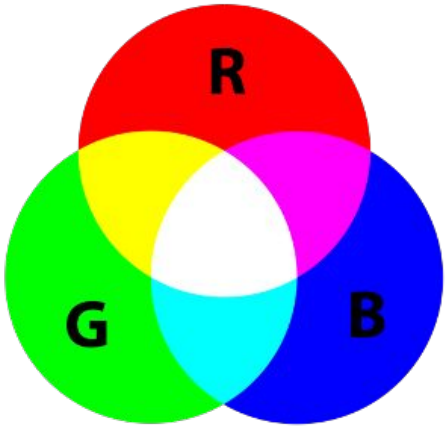
After watching the **take-home video**, you should be able to:

- Analyze how RGB colours mix to produce new colours.
- Explain and apply colour theory concepts to digital designs

RGB Colours

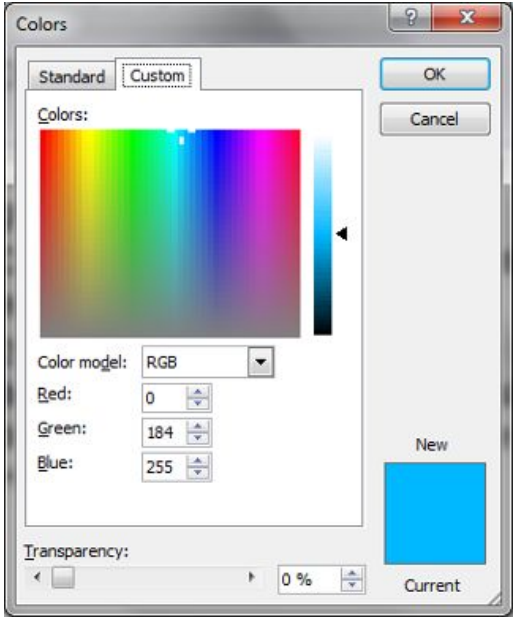
RGB Colours

RGB Colours



- Monitors, phone screens, and TVs make different colours by mixing Red, Green, and Blue lights

- Computer applications use 256 intensities (8 bits) for each of red, green, and blue.



RGB Colours

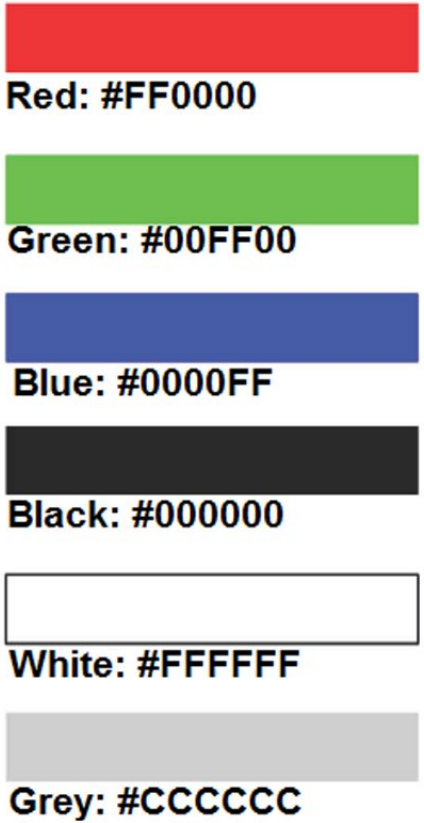
Black is the absence of light:

- **0000 0000 0000 0000 0000 0000 (Binary)**
- **0 0 0 0 0 0 (Hex)**
  - RGB bit assignment for black

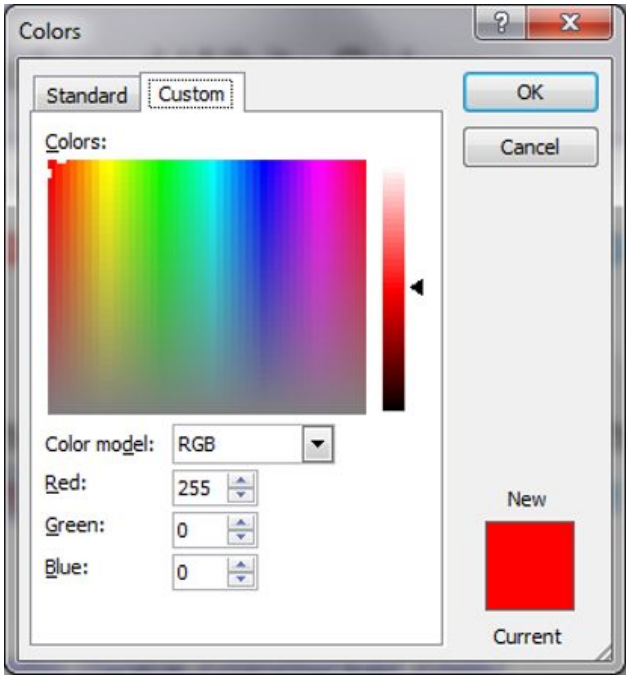
White is the full intensity of each color:

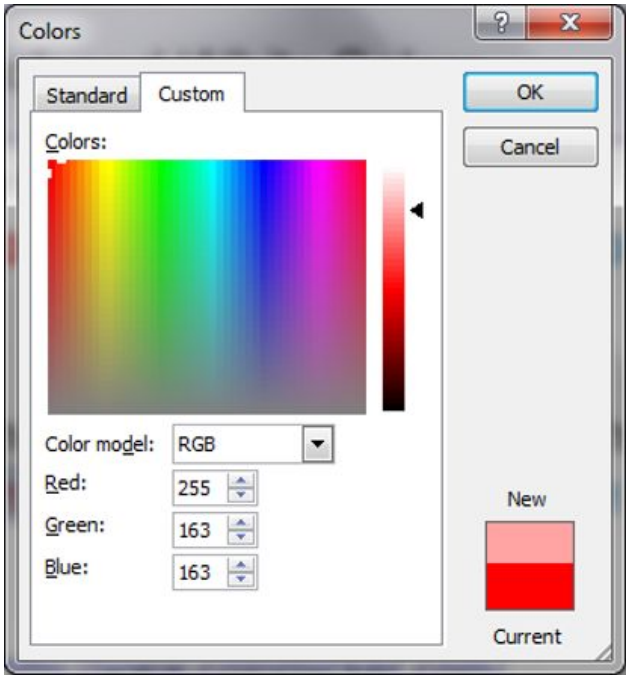
- **1111 1111 1111 1111 1111 1111 (Binary)**
- **F F F F F F (Hex)**
  - RGB bit assignment for white

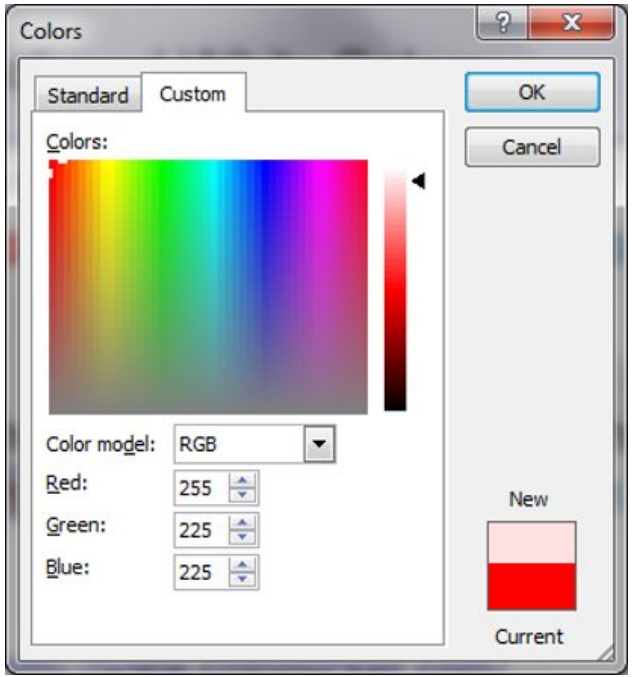
- https://www.w3schools.com/colors/colors_picker



RGB Colours in Decimal







RGB Colours

Colour		Decimal		Hex
Red	→	(255, 0, 0)	→	#FF0000
Green	→	(0, 255, 0)	→	#00FF00
Blue	→	(0, 0, 255)	→	#0000FF
White	→	(255, 255, 255)	→	#FFFFFF
Black	→	(0, 0, 0)	→	#000000

RGB Colours

- **Colour** **Decimal** **Hex**
- Red → (255, 0, 0) → #FF0000
- Green → (0, 255, 0) → #00FF00
- Blue → (0, 0, 255) → #0000FF
- White → (255, 255, 255) → #FFFFFF
- Black → (0, 0, 0) → #000000

Recall: Hexadecimal is a base-16 system where:

- *Digits 0-9 represent values 0-9.*
- *Letters A-F represent values 10-15.*

- *Example: FF (Hex) = $(F \times 16^1) + (F \times 16^0)$*

  $(15 \times 16) + (15 \times 1) \Rightarrow 255$

Decimal	Hex
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C
13	D
14	E
15	F

Q: Which colour best describes the one represented by the hexadecimal colour code: #32CD32?

iClicker

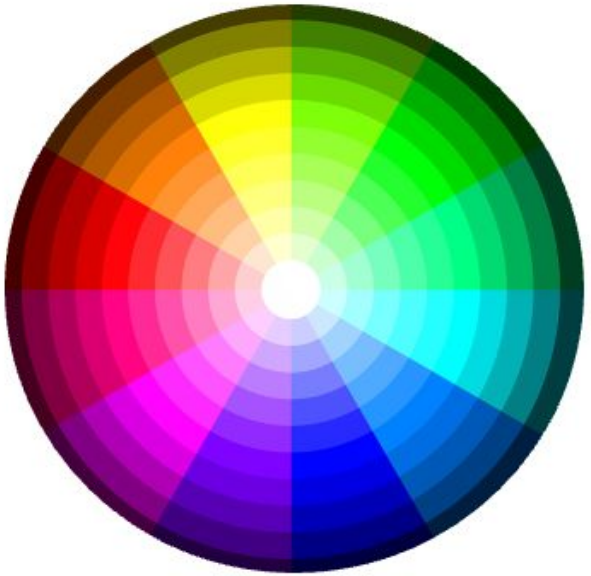
A. Shade of red

B. Shade of blue

C. Shade of green

D. Shade of purple

E. Shade of yellow



Q: Which colour best describes the one represented by the hexadecimal colour code: #800B80?

iClicker

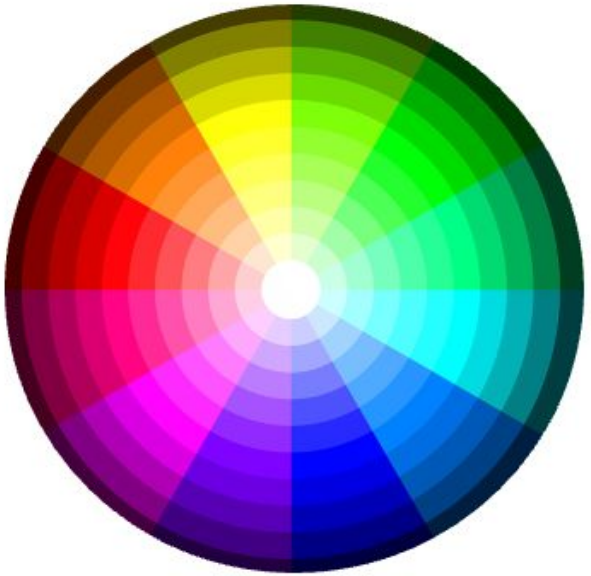
A. Shade of red

B. Shade of blue

C. Shade of green

D. Shade of purple

E. Shade of yellow



Mini-Activity

Color Mixing: Match the Colour to its Hex Rep.

Hex. Rep.	shade of …
#FFA933	Yellow
#FF99FF	Pink or Magenta
#EAE51D	Blue
#A1A2A3	Orange
#1234F8	Grey

Midterm Grades

Course Policy Reminders

- You can view your midterm through TA office/lab hours
- Remarking Inquires: Link to Policy
  - Remarking Request Link to Policy
  - Last day for midterm inquires: **March 23, 2025**
- Passing Criteria: Link to Policy
- Grade Solicitation: Link to Policy
- Professionalism: Link to Policy

Take Home Video

Colour Theory

https://youtu.be/_2LLXnUdUlc?si=ZC0gCVCkhlmnc3KT

What was your main takeaway from today's session?

Wrap up

Wrap Up

- **This week's Lab:** Project Milestone 2
  - Due Wednesday, March 12, 11:59pm
  - **[New!]** *AI Disclosure Form*
- **PC Quiz 5**
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