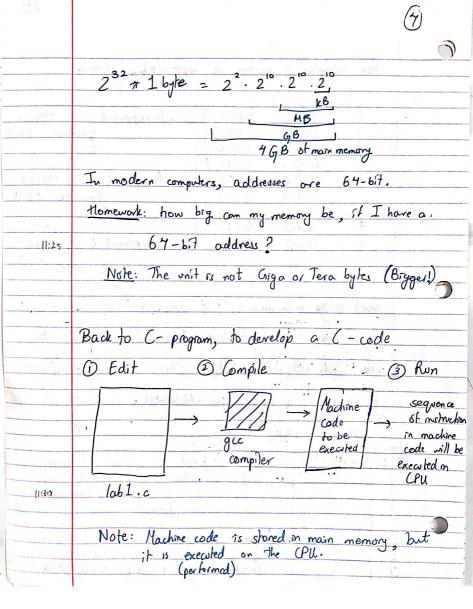
0	APSIOS: Lecture 2 Notes
***************************************	the second of th
	Last lecture: Tutroduction to course
<u>(i) (a (a</u>	D
200	Announcements:
chi si	1) New instructor for LEC 0104, Salma Emara
7120	2) Office hours: Mondays 12:30pm - 1:30pm
	Zoom link can be found in the syllabus
7.1	3) Labu II due Jan 12 11:2 1pm
11:15	Lablis due Jan 22 11:59pm
11.13	TI, II o TII o C I o I
2.19	100ay s lecture: (i) Introduce Basic Computer Structure
	Today's Lecture: (1) Introduce Basic Computer Structure Objectives @ Write a Simple C Program taking input and printing output
	morny many and primary our pact
	To give a context on how your C-program
	fits in the computer system, let's introduce basic
	smother of computers A sequence
	at metruckane
	Software the state of executed or
	nerbined by
	Applications and was a factorial the computer
	e.g. Games,
. , .	your C-program
0	Operating eq.
	System UNIX
	Operating e.g. System UNIX Provides an interface to your
	applications
-100	

	Hardware				
	Salit Ayan	Contral Pr	n (essina	-> execui	hec
		Central Processing 1 Unit (CPU)		instructions in	
		,		native In	
		Control	ALU	code	laconne
Chillian .	Mad Minn	Unit	A. L. L.	e.g. add	two
MS OF	1 - 10 - 38 - C D 118	San H . 2000		numb	ert
250		LO ANY BAY			
	100 201 2	Man mem	am Da	stores	data
	marita s	is cost not	1	and msh	
				that can	
Marrie V	August Consult	I/0 (Inp	ut/Output)		
1.70	Last I show I	Deve	PC	to execut	
1001	O WOOMER THAT THE	NO SE		10 CACCAL	
	/			- connects th	
	and the same	no tons	35.7 55.7	Computer s The user/u	Jan 18
7			The state of the s	era innuit:	ke board
11:25	How is data and	1 mshructions st	pred ?	eg. input:	occitor.
		*			7701117-1
	Data & Number	ers are encode	d in bina	ry:	
en in self				•	
	Smallest onit:	a bit (either 0	0(1)	
7	Buter(B): 8 hit	T			
No. of the	Kilo Byte (KB):102 Mega Byte (MB) Giga Byte (GB): Tera Byte (TB):	4 Bytes	1,57	1900 1 m 19	
	Mega Byle (MB)	1024 KB	A	Transfer 1,247.	
	Graa Bute (GR):	1024 MB	and a critic	Maria L	
	Tera Byle (TB):	1024 GB		and the same and	
	J. C.		1 05	12-12-54 C	.(``)
		54	W X a		
			white will ke		
		*			
The same of the sa	and the second s			THE RESERVE OF THE PARTY OF THE	

0					
	For exam	nples a	rumber 13	represented as	brang
	Carlon and a	5	5 - 1 - 2	Tales of	
		3,			
	0	0000	0000 }	To represen	t 0-3 → require
	1	0000	0001		4 numbers 26its
	2	0000	0010		4 numbers 2 bits
	3	0000	0011	p	226/13
	4	0000	0100	To represent	t 0-7->require
	5	0000	0101		Enumber 3 bits
4.5%	6	0000	0 110	A CONTRACTOR	73 bib
	7	0000	0111)	28-1=2SS
	8	0000	1000	To represent	8 numbers 3 bits 2 -1 = 255 t 0 - ? -> require numbers 8 bits numbers 8 bits t bits = 2.56 to bit circles
			5		21:48
- Charles	1 43 5	191 10 111	-) The sa	SAL SAL DEL	T Numbers
	0		1	288	h = 2.56
	Back to d	he main m	emory. it is	organized +	o be cine !
	7	317 M	. 1	J. U	3 1 1 4 1 1 1
4	access the	e data	mohuchons	There. It's	divided into
		d a			
- ma (3	cells. End	cell ho	lds 1 byte	. Each cell 10	is an address,
5555	hence in	e memory	13 byk-0	addressable. 7.	crsses too are
Last of the				1	
with me a	re present	ed in L	inam.		
Addn	sces.		* * * * * * * * * * * * * * * * * * * *		
232	1 1 byte st	proced	Section .	If I choose	to represent.
232	2 1 byte st	pred	U	addresses usin	ng 32-675
	i			how many dit	ferent addresses
	1			om I have ?	
() (1 -			-	-
2	4 15 1 1 1 1 1 1 1 1 1	, A	()	$=2^{32}$ address	es, lach address
1	× 1	e (Palleren		accesses 1 b	yte
0	Alders of		Total mem	on that can be s	bred 232 1 byte
	Γ-			V /	" + 04 LG



11-30	Write a C-program that takes from the user the
	number of pizzas, and outputs how many slices
	we have mbtal.
1	
	Assumptions: 1 pieza = 8 slices
	# include <stdio.h> -> standard dibrary to use input & output functions of printf and scanf.</stdio.h>
	input & output hunchors of
	printt and scant.
	int main (void) (-> every C-program must howe a main function, where the program starts
	a main bunction, where the
- 11	program starts
Mem	
	int input() 3 - declares two numbers, "variables" int output() and reserve a space for them in main memory decimals. every instruction ends with 3
11111	int output(i) and reserve a space for them in
11/1/	main memory
	decimals. every instruction ends with
VIIII	Doubput (1)
	printf ("Enter number of pizzas:"); Value plays text on screen
	Lalicolays text on screen
,	
	scanf ("/a,d", & input); -> on to input variable in
	format specifier, main memory, and put the
Liston W	expecting an int number dyped there
	scanf ("%,d", & input); > go to input variable in format specifier, main menory, and put the expecting an int number typed there output = input * 8; > instruction / command
	storing mpVt x8 into
The second is	output in memory
	print + ("We have % of slices from %d pizzas In, input, output);
	print f ("We have % d spices from %d pizzas In, input, output); will print rative will print rative of main function return 0; -> stops program! return 0; -> stops program! recloses opening bracket of main function
	newline newline
	1 101111) hacket of main function
) 7 cours of sing 1

Show Demo on VS Code!	3
▶ Better raming of variables (1) Camel Case	r water along with
J. Of vanues (1) came code	٦١.
e.g. input Pizza, output s	lices
Fridentation (2) Snake case	7
> How to write coments input-pizza, output-sli	ces)
France come con	-
➤ Escape seguences	
To print "	THE RESERVE AND ADDRESS OF THE PERSON NAMED IN
(0 A M	
oontf(" "").	
point f (" \" ");	
backslash 3 to avoid confusion	
with " of print f and what is ho	7
be printed	
To post	
to prince	
printf (" \");	-
princi ()	
back dack by award and from	
backslash to avoid confusion with \ in In	-
Heads - up on next lecture:	-
int vs. double	
1m VS. nounc	
int change a rember it till	
just: Stores a number without any decimal	
	The section is a second
7 double: shows a marker of desired in t	Marin production of the Alpha
decinal decinal decer " Chitica as to	1
double: shores a number with decimal point and decimal places, "floating point number"	- American
YCOMPE	Car w podana
Andrew was to be a series of the series of t	