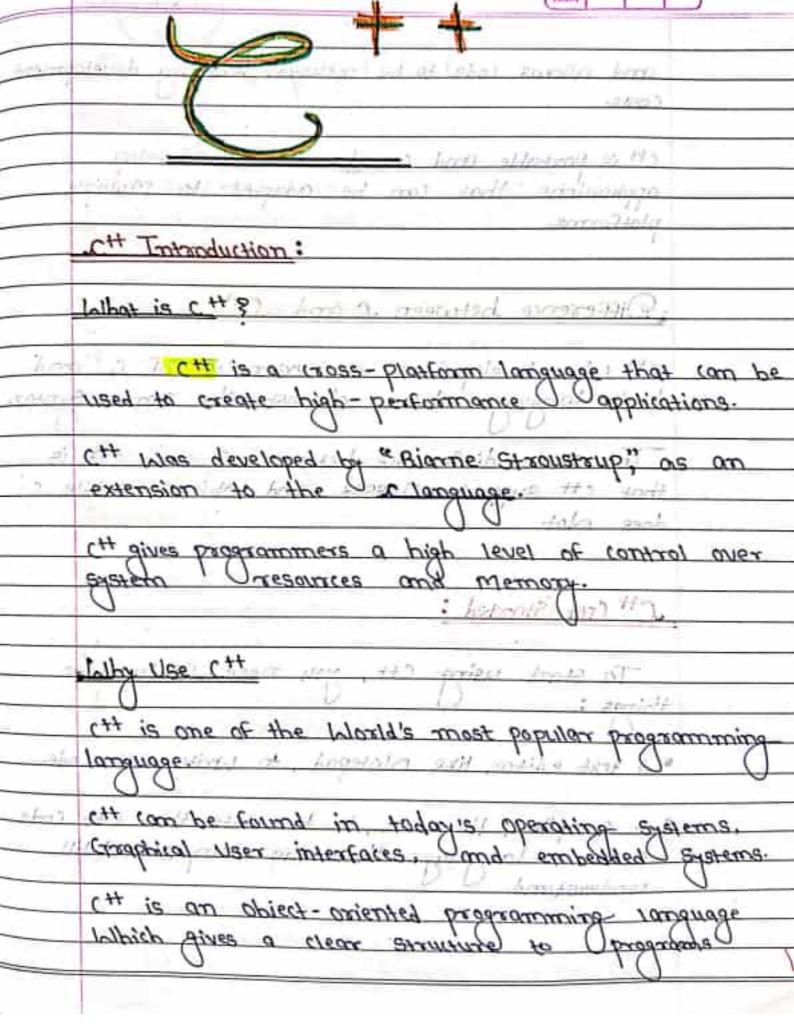


(++ TUTORIAL Harmat (1) Zar COOL STHILL HE GI ACH INTRODUCTION 43 (In Falk Lace 2> CH INTRO BULLINGS LINEAR HO (8) 3) C++ GET STARTED DRADDA HI) (EL 4 C++ SYNTAX 24511/17/1012 HT COS TU9TUO +1) < at) (HE REFERENCES 6) CH COMMENTS =957[676] H) Kes 7) C++ VARIABLES 20 Cit Florettools 8) CH USER INPUT 20 FIFTHER TRACTICAL PARTITIONS AS CO. S) CH WATA TYPES THE 194VO LIBERT TO AS 10) C++ OPERATORS to required at a Cir. IN CH STRINGS

	12) CH MATH
	3 CH BOOLEANS
	IND (++ CONDITIONS
	15) (++ SINITCH INTROTUTE IN
	16> C++ MHILE LOOP
	F) (H FOR LOOP
	18) (H BREAK/ CONTINUE
	19) C++ ARRAYS
	20) CH STRUCTURES
	21) CH REFERENCES
	22) CH POINTERS
	23) CH FUNICTIONS
	TOSTAT VERLI - TEE
	24) CH FUNCTION PARAMETERS
	25) CH FUNCTION OVERLOADING
1	26) CH RECURSION



and allows code to be reused, lowering development COSHS. C++ is partable and can be used to develop applications that can be adapted to Multiple platforms. Difference between a mid Ltt. a soul CH Was developed as an extension of and both languages have almost the same syntax The main difference between c and ctt is that c++ support classes and objects, lathile c exercis in tourst dayed a management and the - WEST CONT PORT 2417717227 I't Get Granted: To start using ctt, you need main two things: rayman from statement out in and si tto · A text editor, like Motepad, to Write C++ code · A compiler, like acc, to translate the ctt code into a language that the computer will understand. spring till grimmangerer Laterston - 1551-10 om 2; the

	CH Syntax:
	THE SALVEY .
	Example 7
	t " 127 printed me T " 13 deed
	# include < lostream>
	Using namespace Std;
	f c) gipm tai
	COLH << " Hello Woold!"; = Homeron ++)
	Settle 0:
4270	1 1 1 minutes of bases and most services.
	at all med to aldahner where it where as
	vilure - sele province according and surrens was und
	C++ Output: is and and second labor
	In a substantial than the same to the same
	Example 7
	* Algorithment of the special
	# include <iostream></iostream>
h	using namespace Stages accommon and a charie
	int main ()
22	A set in any well know with the treatment
	COLH KK "Hello Warld!";
	TEHAD 0:
9-59	0
	the second of the second of
_	Practice Example I
	# include (instrum >
	Using namespace Statement a of state !!
	i lbreakt outsit a so term
	the state of the s

	int main () aipm tail
	1
	Cout << "Hello Marid!";
	COLH K " I am learning (++";
	Terum 0; Ocompanient's abutantes
	3 C Ky2 stagparmore saylars
	(A) ribor in
	Ctt comments: " 1-4 - 2/2 - 2/2 32 - 4103
	THE AMERICAN
	Comments can be used to explain c++ code and
	to make it more readable. It can also be used
	to consider branches in an reasing also pe likely
	to prevent execution when testing alternative
7772	code comments can be sig singled - lined on
	Multi-lined.
	City II I I I I I I I I I I I I I I I I I
	Single - line Comments:
	S' mperani's shutering
-	Single-line comments Start With two forward
	slashes (//).
	- C3 minery and
	Any text between / and the end of the line is
	ignated by the compiler of which is
	2 2000
	This example uses a single-line comment before
	a line of code:
	1 alamas 2 asimore
	Example
	// This is a comment of more more product
	cout << " Hello World!";

_	
e d	Multi-line Comments:
-	marasur mas androv modal) tar as
	Mulli-line Comments Start With /* and ends With
a.	Company of the contract of the second of the
C	Any text between /* and */ will be ignored by
	Example Total and willed some some to load a
_	/+ The code below will print the words Hello world!
_	to the screen, and it is amazing
1	*/ cout << " Hello Marid!";
	C++ Variables:
	U I
	Variables are containers for Storing data values.
_	In C++, there are different types of variables
tid.	w year and in amulately have a solutioners as service
	• int → stores integers (Whole numbers), Without decimals, such as 123 or - 123
_	$4 \mathcal{M} = conducar \mathcal{M}$
	double → Stores Floating Point numbers, With decimals, such as 19.33 or - 19.33

Ditte

	· char + Stores single characters, such as in
Aller and	or 'B! I char values are surrainded by single quotes.
	0 0
1)	String + Stores text. Such as "Hello Island" String Values are surrounded by doubte quotes.
	• bool - stores values With two states: true or False.
	theolist and soire until somet whose and the
	A Literal Contract of the Cont
	Declaring variables: it has reserve water
	To create a variables, specify the type and
	Syntax 2 : Maldoich :43
Souted	
20	Example Trans distance with more and with mile
fring	assign it the value is:
9.3	int mydum = 15;
ritu.	LOUNT OK MYNIMON; without something on aldert a
	The state of the s

Other Types Example 7 Integer (Whole number Without 2 f t x = 11 15 27 decimalal double myFloatryum = 5.99; // Floating point number (With decimala char myletter = : D'; all slatt // and the string myText = "Hello"; smill missh of String (dext) bool OmyBoolean = true; // Boolean (true or False) : 03 = r 0 = H 3 = H 477 Display Variables: The cour object is used together with the KK operator to display variables. To combine both text and a variable, separate them with the KK Operator: Example int myAge = 35;

Distri

	Add variables Together:
	Example 7
	int x = 5;\\
	int y = 6: in dellat radionica accordat à Caracarte
	int sym = x + y;
	cout & sum; " 1 pre = mulainnifying sidilist
	- dellas interminentalismo pretance
	Extraoretist.
	C++ Declare Multiple Variables:
	Sistements
	To declare More than one variable of the
	some type, use a comma-separated list
R. T.	The the sunt a construction to
	Example 7 Carred on the constant
	int x = 5, x = 6, 7 = 50;
	Cout (x + 2+2; : saldairal palasia)
55	
22	One value to Multiple variables:
	Secretary of details at material
	Assign the same value to multiple variables in
4/11	one line:
	- Suppress SN off delice many
	Example 1
	y allergox?
	int X, X, Z;
	= 3 = EV :
	COLH KKOX TO +12; HAVER IN " OF T IN ST HAND

C++ Tdentifiers:
description : saves 1 conference
All C++ variables must be identified blith unique
These unique names are: called IDENTIFIERS.
Identifiers can be Short names (like x and x) and
Thentifiers can be short names (like x and y) and more descriptive names (age, sum, totalvolume).
Example 1
e algenose?
// (agod)
int minutespertaur = 60;
// OK, but not so eggy to
understand what I'm actually is
int m = 60; Therefore and
" H 25 " : 21 redomin gent " Le sun!
Shirted House with the graphs to
C++ (onstants:
Lilbert you do not blood whom to all a series
When you do not want others to change existing
variable values, use the const keyword (this Juil
declare the variable as " constant " lathich mean
mchandraple any read - out):
Example V Last 4 - 1 - 22 4 harmon of 11
const int myslum = 15; // myslum

Date

	Will always be 15 : William 17 41
l	myolum = Lo; // error; assignment
average av	
	or egg one variable
20	The state of the s
1-9-5	CH User Input : 200 septem septem seed
taa va	101 1 101 1 101 1 101 101 101 101 101 1
	cin is a predefined variable that reads data
- 47 F F F F	From the keyboard with the extraction
	Oberator (>>>)
	The transfer to the second sec
	Example 1
	Berline Ditren Court than Miles Asset College
	int x;
	cout << " Type a number: "; //
	Type a number and press enter
	(it >> x; // Get user input - From more
	the Keyboard : in = m in
	cout <2 "your number is: " << x;
	11 Display the input value
	: Strasfamo 7 417
	* Good To know the sould through intermedial
متخر الملتمتة	I I Therefore design with make assente and attended
maken y	cout is pronounced " see-out" used for myout
	and uses the insertion operator (cc)
	cin is pronounced " see-in". Used for input.
	and uses the extraction operator (>>)
	The section of the section (>>)
	the state of the providence of the state of

int sum; cout << " Type a number :"; cout << "Type another number:"; cin >> y: sum = Ux ty; and cout ex "stom is: " ex sum; Words a small of 1 C++ Data Types : Tre Bart During A variable in c++ must be a specified data type: would some of correct respectful 1 and the series of the series o int mynlim = 5; Integer (Whole number) Float myFloatryim = 5.99; // Floating point number double my Doubler Jum = 9.98; // Floating point number char myletter = 'D'; Midnish character motories 2000 book my Boolean = true; Boolson Justin 77112

String	9	
0	effective alleg	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
		A control to
Basic Do	to Types	i medining of apply 1122 times
	0,	1 :x << 11/2
Data Types	: "Size	Description
. a		Lever pla
boolean	4	Stores true of x = mens
III Times John Aria		Falge : Values and Aller
	0	
char	- 1	Stores a Single
	94Kd	character / letter / Number
	a	or Asch Values
J. St. Sleen.	a cd 12	months all alderests A
int	2 01	Stores Whole numbers,
A TOTAL CONTRACTOR OF THE PARTY		Without decimals
4-1-2		
7 July	U	c upavor?
Froot	Ц	Stores Fractional
	bytes	numbers, containing
	/ \	one or more
		" decimals sufficient for
		Storing 6-7 decimal
	1 3 80.0	= muldigits. Offer 12 million
		a radical a Law makes
double	118	States Fractional
	bytes	numbers, containing
	110	one or more decine
		Sufficient for storing

	Scientific Numbers:
	A Floating point numbers can also be a scientific number whith an "e" to indicate the power of Lo:
rations	Example 7 Example 7 Example 1 or system of bears was and of the sold
MAKE!	double di = 12 Eq ; er en en en elle super en
2 1 2 1	COLH << \$1:
	C++ Boolean Data Types: and = mulain in
	Keyword and can only take the values true of
	False = 0.
	Example 1 100.000 and and and
	bool is coding Fun = true; bool is fish tasty = False; cout << is coding Fun; // outputs
	r (true)

	cout << isfishTasty : // outputs
	O (False)
	1.02 ± 00 t = 1000 2 200
	The production of the first day have the
	C++ character Data Types:
	The Constant and
	The char data types is used to store a single
	character. The chargracter must be surrounded
	by single quotes, like 'A' or 'C'-
	O O '
	Example I : 2 symmetre A
	char myarade = 18, ; morning supported
	court ex myangder; on last paration bearings
	O-
- 9	armer amalahasa amala mananan
	C++ operators:
	c+v. 256A* crestitAA 4
	Operators are used to perform operations on
	variables and values.
	he use the toperator to add together
	two values:
	Proposition of the second
	Example 7
	intx = 100+ 50;
	2 360900 4124
	A M. and substance contents
	Distriction of the second of t

Date

	ex-@
	12 Feeton Ya
	int sum1 = 100 + 50; //
	150 (100 +50)
	int sym 2 = Sym 1 + 250; of // 1500000 11)
	400 (150+250)
3100	int sum3 = sum2 + sum2; //
	800 (400+400) morrows and market
	The strate mineral field the companies and
-	
	Anithmetic Operators: 1 910 more
	Arithmetic operators one used to perform
	common Mathematical operations.
	The state of the s
	Operator NAME Description Example
	i the return of the
	t Addition Adds Xtx
	togetherm Togetherm
	- Parties
	two Values and
	two values as a secondaria
	- Subtraction Subtracts X-X
	- Subtraction Subtracts x-y
	Subtraction Subtracts one value
	- Subtraction Subtracts x-y
	Subtraction Subtracts X-y one value From Another
	# Multiplication Multiplies X*X
	Subtraction Subtracts X-y one value From Another
	# Multiplication Multiplies X*X

_	
	value by
	Another
_	A Water - Cycles A. T. Schowell -
0	to Modulus Returns the x % x
1	division = 0
-	Remainder
_	<i>E</i> デス = X
+	+ Increment Increases the ++x
	Z-X-X Z= Value of a ==
	variable by
	1 - 2 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -
	Control of the Contro
-	Decrement E= Decreases = 1 x
	the Value
	10 x = 1
	Variable by
	3X#X
P	Assignment Operators:
-	
	Assignment Operators are used to assign
1	glues to variables.
1	differ to harrables:
	To About oxporting Late a state of the
~	In the example below, we use the assignment
-	perator (=) to assign the value to to a
+	corriable called x: 0
-	De la contraction de la contra
F	xample 1
	77 X X X X EXT

List of all assignment Operators: Operator	Some As $x = 5$ $x = x + 3$ $x = x - 3$ $x = x + 3$
Operator Example Same As	x = x + 3 $x = x - 3$ $x = x + 3$ $x = x / 3$
= militiz=5	x = x + 3 $x = x - 3$ $x = x + 3$ $x = x / 3$
#	x = x + 3 x = x + 3 x = x * 3 x = x / 3
#=	x = x + 3 x = x / 3
#=	x = x + 3 x = x / 3
*=	x = x *3 x = x *3
*=	x = x *3 x = x *3
*=	x e x/3
X	Alabhan and an
9/6 = 2X 9/6 = 3	Alabhan and an
8=	4 - 44
8=	1 = X %
8=	
: xm:xm:x18) for xm:x13:distA 1	
: xm:xm:x18) for xm:x13:distA 1	x=x6
1= of home x1=3 gradered x=x13 place 2= ye = x1 x1=3 gradered x=x13 place 2= ye = x1 x1=3 gradered x=x13 place 2= ye = x1 x1=3 gradered x=x13 place 2= x1 place x1 place x1 = yellowers 2= x1 place x1 = x1	920
1= of Asau X\=3 symptome() X=X\3mland 2= 1/2 = 1/2 X\=3 cond = 1/2 X = X\3/4 of 2= 1/2 = 1/2 X\=3 cond = 1/2 X = X\3/4 of 2>= 1/2 = 1/2 X\=3	
>>=	
7	nicental sould entitle
77= X77=3 : X = X>>	
77= X77=3	7.
24= X44=3 X= X44	
LL= XLL=3 X=XLL	
N=A==	The state of the s
$\mathbf{z}_{i} = \mathbf{z}_{i} + \mathbf{z}_{i} = \mathbf{z}_{i} + \mathbf{z}_{i}$	

Distin

Logical Operator	Operators.	are used to d	etermine th
logic o pe	operators tween va	riables or valu	68 MEGANIEN
Operator		7.7	CJ I
- fradin	Name	Description	Example
88	Logical	Returns true	X4568
several !	111745 1 BO	1.7	1 55 4151
			Tingra pi
	(1)		X < 511 X
	0000000	7	in sizy
n to con	9		
= 2	30-13	- 15 TILLE	water of 1
2==3	Logical	Reverse the	1. (X 45.
- V	yot	Tesult.	68x<
W K= E	4	LOUD TEXTIMES FOLKE	10)
		if the result	
レン	1741	is true	Κ.
CTOT		condf sep i	- 2
DIKTU	99:	-111 - 1	
	-0/=	4 1941011)	=<
Strings	one riseq	to storing tex	<i>.</i> +
String	variable c	ontains a collect	ion of
	STRIN	STRINGS: Strings are used String variable (BB Logical Returns true statements one true II Logical Returns true Statements is true I result The result is true STRINGS:

-

_

_

_

	Characters Simounded by double quotes:
_	- Sample Court V Completing Prints
_	· wordtmen
	Example 1 - constant 25 hos
	a value. : type string and assign to
_	a value. : " On Jone On James 1
	String greeting = "Hello";
-	To use strings, you must include an additional header file in the source code, the strings
	header File Jin the source code, the string)
	libarary.
LE	action by the sen sense habbe and residender
66	11 Include the string library
	# include < string > . regarder
_	
-	11 create a string variable
	String greeting = " Hello";
	101 = 2 201
_	Same to some to
	String Concatenation:
	Considered made and
	The + Operator can be used between strings to
0.	add them together to make new string.
	This is carried concatenation.
-	
-	Example 1
	String firstname = " John ";

	String Last Name = "Doe";
	String FullName = FirstName +
	cout << fulldame;
d meta O	Numbers and strings:
	U
Industri	Adding Numbers' and Strings
napas.	consatenation.
	The you add two numbers, the result will be a number.
	Example I stationer reviews a state it
	int x = 10; $int y = 20;$
	int z = x+y; //z: Will be to zood and a
75	TE you add two strings, the result will be a string concertenation:
	Example 1
	String x = "Lo"; and " = saretained against

	String y = "20"; : see and paters works
	string = x +x; 1/ 7 Will be
	1020 Ca String
	some value of the part of more
	Secret stone of and part of
	String Lenght:
*	s stances in
	To get the length of a string, use the
	Clenght a Function out of a persone
	· · · · · · · · · · · · · · · · · · ·
-	Example I comments from
	String txt =
	"ABOSEFGHITKLMNOPORSTUVWXYZ";
	cout << " The length of: the +xt / minde
	string is: " << +xx+ length ();
	1 Argent Cods formans - species
los d	Access Strings:
Ī	L 10
	The character in a Strings by refferring to
	its index number inside I square brackets [
	not mail " sperious " Como
+	Example 1,
+	AND NOTE OF THE PROPERTY OF TH
	String mystring =" Hello";
-	COLH CK THYSTTING [0];
- 2	OLHPHIS OH Composition to the statement with
-	- property with son development to an
_	

	change String characters:
	in a string, refer to the Index number,
	and use single quotes.
	Example I
	string mystring = "Hello";
	1 OUH PUTS JOHN INSTEAD OF HELLO
	= 4x4 paints
	Special characters:
	Strings - special characters:
	an error
J service	String +xt = " We are the so- called " vikings " From the north.";
	Backslash escape character (1)
	special characters into string characters

	mist t =1 piertes	10
		single quote
1"	11 •	0
	. 10	Double guot
11	1 Vincence	note - Backslash
	Simple	Backslash
Warmer Committee	has vigracer or	iau a.ll
Example 7	applicate barracter	Ann hundred
-9A 34	of Ladieson be	alarasi ad mai
String txt = "	We are the so-	10 00/-42 -3
called I" Viki	ipps " From the	D
wath. ";	J	
		r. Warner ?
User Input 8	Strings : Sprint	areas a shulacei u
	J carri	oli i shubai si
This possible	to use the ext	raction operator >>
on cin to	Store a String	entered pt a rise
		9 4 101
Example 7	- Warrell Har arrive	ova enirth : 15110
	i waltalista s	154 Gm : 40
String firstNo		A grant
cout Uce " Typ	e your first name	
cin >> Grand	ame ; 1/ get user	innut
from the V	broadys	- 11kut
COUT KK " YOUR	Organe is: " «	
Firstrame	18 30	

	// Oyour name is: Tohn
1947	alesta V
	String NAMESPACE:
	- Omillion plansance:
	Omitting Namespace:
	77
	The using namespace std line can be
===	omitted and replaced with the std line
	can be keyword, followed by the :: opera
	For string (and cout) objects " = 200
_	Eve-sia-
	Exambles
	#include Liostream? : surprise year To mail
	# include (String)
-	a manage and managed and have or addition of the
454	
	\$ () () () () () () () () () () () () ()
	Std: String greeting = "Hello";
	3 : " :
	tings west to the humbreres are mit
	the state of any
	4 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 +
	Completed

	C++ MATH:
60%	while of hour Hills your comments now of
2.40	Max and min to sho which with mes well
	The max (x,y) function can be used to find the
	Example 1
	CONFECT MOX (5, 10); sures except and over
	The transfer of the second sec
	C++ < cmath > Header 27110/ malana
Issal Suri	Other functions, such as sort (square root), round (rounds a number) and log (notional) (logarithm), (an be found in the (cmath) beather file:
	Example 1
	1 4 mil = milipariantai land
	// Include the mathalibrary
	# include < comgth> 1 millions 31
	COUNT CK SOME (GL) STATE IN THE PROTECTION OF TH
	cout (4 round (2-6);
ø	COLH CC 109 (2);
	in straint and all the productions are the
	in straint and the greenstrate and attention

	C++ Booleans : IIII] 11
	In programming, you will need a data type that can only have one of two values, like:
21 60	-(
	True / False
	r signer x3
	for this, (++ has a hool data type, hillich com
	Boolean Values reports (drom 1 14)
1.30	A boolean varible is declared with the bool
Chi	on False. The values true
	Examble 1
	bool isladingfum = true;
	Cout << is coding Fun; // Outputs
	COUNT (4 is Fish Tasty; // OLHPHS)
	2 C 4 A A A A A A A A A A A A A A A A A A
	From the example above, you can read that a
	Televis e.

	However, it is more common in to return a
	poolean raine ph combaring raines and rainapres
	Ctt Bodean Expressions:
)	A Boolean expression returns a boolean value that is either L(true) or 0 (False).
	This is useful to build logic, and find answers.
	Use comparison operator, such as the greater than (>) operator, to find out if an expression (or variable) is true or false.
	Example 7 storageston 21 tora suntition +19
-om-t	$\lim_{x \to \infty} \frac{1}{x^2} = \lim_{x \to \infty} \frac{1}{x^2} $
	(true), because to is higher than 200 0
	Real life Example and and made a
	Out if a person is old enough to vote.
	In the example below, We use the 7= comparison operator to Find out if the age (25)

- 26	is greater than or equal to the voting age
e/dnlv	limble, Which is set to 18.
	Example 7 : ample entitle or of 11)
	Int mygge = 25;
3100	int voting Age = 18; missours maland A
- dreis	cout << (myage > = voting age); // returns 1 (true); meaning 25 year
	olds are allowed to vote
	served of an a sen but of metering (2)
	C++ TF Elsevier was supply at a supply and
	C++ (maltions and 15 statements - warment
	(++ supports the usual logical conditions from
	Mathematics!
	· Less than : qikhai at amend (and)
	• less than or equal to: q <=b
	• Equal to: q == b
	And Not Equal to 1 a 1 = b mare will study
	(44 has following conditional statements:
ar l	• Use if to execity a block of code to be
	, U wife 40 Be

710	executed. If a specified condition is true.
2.38	I was the condition a same as
	Use else to specity a black of take to be
	executed, if the Same condition is False
	· Use else if to specify a new condition to
	test. If the first condition is false
	and sample di or " at dias."
	· Use switch to specify many alternative
	blocks of code to be executed.
	The if Statement : 9.3/4 41)
	Use the if Statement to specify a black of ctt
	code to be executed if a condition is true
4 00	that is vinted a stream of the terminal with
	Syntax water on the continue of farmer
	if (condition)
	5
	11 block of code to be executed makens
	if the condition is true
)
	A Table of the Control of the Contro
	* IMPORTANT - IF is in lowercase letters.
	Uppercase letters (IF or IF) Will
	generate an error

Example]		Test two values to find all it 20 greater than
Example] IF (20 > 18) Cout << "20 is greater than 18": The else statement Else statement to specify a black of (ade to be executed if the condition is False. What if (condition) If (condition) Whock of code to be executed Whock of code to be executed Whock of code to be executed		18. If the condition is true, print some text:
If (20 > 18) South & 20 is greater thom 18": The else Statement to Specify a block of (ode to be executed if the condition is false. (Syntax If (condition) Superior of code to be executed if the condition is false. (Syntax (Synt		I of the The Shard in reference of only will be
IF (20 > 18) Goult 44 "20 is greater than 18": The else statement to specify a block of (ade to be executed if the condition) if (condition) The condition is true getse 3 annual and	anti-	Example 1
CH Else: The else statement to specify a block of code to be executed if (condition) Condition Code to be executed		
Cout << "20 is greater than 18": CH Else: The else Statement to specify a block of code to be executed if (condition) If (condition) If (condition) If the condition is true I block of code to be executed I block of code to be executed I block of code to be executed	7.0	
CH Fise: The else statement to specify a block of code to be executed if (condition) If (condition) If the condition is true If the condition is true I else statement to specify a block of code to be executed If the condition is true I else statement to specify a block of code to be executed I block of code to be executed	_	30 of the world of the said and the said
CH Else: The else statement to specify a block of code to be executed if the condition is False. (Syntax If (condition) If the condition is true If the condition is true I else § (block of code to be executed If the condition is true I else § (block of code to be executed		cout << "20 is greater than
The else statement to specify a block of code to be executed if the condition is False. (Anniax if (condition) if the condition is true		18": Talle 19 2 2000 of deline 1911 0
The else statement to specify a block of code to be executed if the condition is False. Which of code to be executed If the condition is true Relse & annual and a state Relse & annual annual and a state Relse & annual ann		3 herring of the short to a sentil
The else statement to specify a block of code to be executed if the condition is False. Syntax if (condition) block of code to be executed the condition is true clse & and the condition is true		the tree persons in constituting
The else statement to specify a block of code to be executed if the condition is False. Syntax if (condition) block of code to be executed if the condition is true clse & annual condition is true condition is t		
Else statement to specify a block of code to be executed if the condition is False. Syntax if (condition) block of code to be executed		CH Else: dancero-loss if all
Else statement to specify a block of code to be executed if the condition is False. Syntax if (condition) { // block of code to be executed if the condition is true } else { // block of code to be executed		The Market Control of the Control of
Else Statement to specify a black of code to be executed if the condition is False. Syntax if (condition) { // black of code to be executed if the condition is true } else { // black of code to be executed	8 3	The else statement
executed if the condition is False. Gyntax if (condition) { // black of code to be executed if the condition is true } else { // black of code to be executed		the state of the s
executed if the condition is False. (Anntax if (condition) // block of code to be executed if the condition is true ? else &		Else statement to specify a block of code to be
if (condition) If (condition) If the condition is true		executed if the condition is False.
if (condition) If the condition is true I else & Anne		
if (condition) block of code to be executed block of code to be executed block of code to be executed		Chartax I mailting \$ 3.31
if (condition) // black of code to be executed if the condition is true ? else ?		
// block of code to be executed if the condition is true ? else &		
// block of code to be executed // block of code to be executed		
if the condition is true ? else & code to be executed		
? else & code to be executed		
// block of code to be executed		
	of I	TO THE LOCK OF LOCK IN THE PARTY OF THE PART
THE TONIGHTION 15 HOUSE	1141	
2		
3	_	}

	Example 7 sent si contributo
	int time = 20;
-	if (Hime < 18) } .
_	Cout << " Good day - ";
_	3 else 9
_	cout << " Good evening."; I (a) s will at
_	3 :" : Changer food " >> 4001
	11 outputs "Good evening " > 1
	1 Doub Land " 22 telas
	D E 22/4 3
	CH Else TE: in pringue hand if as mos
_	\$
_	The else if statement from hood " surement
	Use the else if Statement to specify a new
	Use the else if Statement to specify a new condition if the First (andition is false)
24	Use the else if Statement to specify a new condition is the first (andition is false) Syntax [E ((andition)) }
20	Use the else if statement to specify a new condition is the first (andition is false) Syntax If (condition) & code to be executed
2	Use the else if statement to specify a new condition if the first (andition is) false. Syntax If (andition) 2 // black of code to be executed If (andition) is true
£ 5.	Use the else if statement to specify a new condition if the first condition is false. Syntax If (condition) \(\frac{2}{3} \) If (condition
2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Use the else if Statement to specify a new condition if the First (andition is) false. Syntax If (condition) \(\frac{2}{3} \) If (conditio
3 J. 12 C	Use the else if Statement to specify a new condition is the first (andition is) false. Syntax If (condition) ? // block of code to be executed If condition1 is true ? else if (condition2) ? // block of code to be executed If the condition1 is false and
2 de 12 de 1	Use the else if statement to specify a new condition if the first condition is false. Syntax If (condition) ? // black of code to be executed If conditions is true ? else if (conditions)? // black of code to be executed If the conditions is false and conditions is true
2 d	Use the else if statement to specify a new condition if the first (andition is) false. Syntax If (condition) ? If block of code to be executed If conditions is true 3 else if (conditions) ? If the conditions is false and conditions is true 3 else 3
25 31 31 (Use the else if statement to specify a new condition if the first condition is false. Syntax If (condition) ? // black of code to be executed If conditions is true ? else if (conditions)? // black of code to be executed If the conditions is false and conditions is true

	Conditions is False
	}
	form v. mayir ind.
	Example 1
	1 11. min hand 1 05 4 mil
_	int time = 22;
	if (time (10) } : " or nove bear " >> +in)
	cout << "Good morning.";
	3 else if (time < 20) of the head " appropries in
	cout << " Good day.";
	3 else §
	COUT << " Good evening."; : 27 7217 11)
	3
- 155 -	// outputs "Good evening."
-	
	Car of the Carte of the Carte of and and
_	C++ Short Hand IF Fise:
	Shoul Haml TC Floo (Town - One
	Short Hand If Fise (Ternary Operator)
	Thomasia along a chamber hand to see a sure a
	there is also a shor-hand it else, lathich is known as the ternary operator because it
	consists of three operands. It can be used to
	replace coultiple lines of code with a single
	line. It is often used to replace simple if
	else statements.
	and of protein in
	Syntax
	Tablified of the state of the state of
	Variable = (condition) ?
	expressionTrue: expressionFalse;

Exampl	let	- Hould A granded Soll
int tim	ne = 20;	el milennage delices all a
if (tir	me (18) §	
COLH	LC " Good day.	Man of to sules of a
3 6786 8	3	SERRE HOLDER SOLITONE
COLIF	LL " Good eveni	ina " :
NIAGO	J. Jateliniani a.G	Theory of the speak of a
1 15	and the later and	Ladariaka all abas
	T. Terr. Lough	
CH SU	HITCH	ministrah Lores wound will a
		hadmash and applicate three to
	Switch Stateme	
		Expressive E
500	itch statement	to select one of many
720 10.00		- / 1
to be	exemited.	Lead to the way and
to be	exelliteo.	E Control of the
Keylle-		3 71
to be		E Cont Paris
Syntax	x	E Control of Anthon
-Syntax -Switch	(expression) {	E Control of district
Syntax Switch (ase	(expression) {	I control of delice
Syntax Switch (ase	x: (expression) {	Control distant
Syntax Switch (ase	x: (code plack x:	Control dates
Syntax Switch Case // break	(expression) {	I workers of a state of the sta
Syntax Switch Case // break	(expression) { x: code plack x;	The property of the second of
Syntax Switch Case Inequal break	(expression) { X: Code block X; Code block	I workers of a state of the sta
Syntax Switch Case Incore Case It break defa	(expression) { Code Plock Code Plock Code Plock	The second of th
Syntax Switch Case Incore Case It break defa	(expression) { X: Code block X; Code block	The second of th

This is how it laterks:	1 of granos if
• The Switch expression is	evaluated once to
• The value of the expres	sion is compared with
to the section of the section	ava keap " in hall
· It there is a match, the	
• The break and default and will be described	
Example 7	replace Warrier of L
	such they was
int day = 4:	
switch (day) {	7337410702 733 405
Case 1:	10-01.00 (1-2)
cout << " Monday";	
break;	Completeners Labelia
Case 2;	1 2261
Cout << " Tuesday ";	(thereal -all -y-y-y-
break:	The second secon
break ;	3000
case 3;	19 siin) -
case 3;	the saint
case 3;	tur sant month was 10 th
case 3; case 3; break; case 4;	the saint would used the
case 3;	the sint

	COLIT << " Fridgy ";	
	1 Vanada (A)	
	3 preak;	45
	2 EUDIT 2 EL LUTRY 22 TO	9.T.
	Outputs "Thursday" (day 4)	
	0 0 1200	29.A
	Di Free nel paident " >> the	
	The Break Keylord	a_M
	- Journ	5
	Out of the switch block.	breaks
	This will stop the execution of more case testing inside the black of	cade and
30	When a match is found, and the job is	done its
	three for a break. There is no need	
	testing.	
	+	
	don Dorit and used assented should are a	
-41 de1)	down where shell event will been and	120/5
	The default Keyword	
300	was to make a property again again with	-17-
	if there is no case match:	ode to nin
	X 2340	452
	Example 7,	U
	E Constituent 1 and	dist
	int day = 4; resurance and as would adopt in	6
	switch (day) {	-1
	case 6:	
	COLLE CC "Today is saturday";	
	0	

	break: " " philippe " 33 doms
	case 7:
	Tout << " Today is sunday ";
	break: Organia Ombania - summer
	default;
	cout << " Looking Forward to
	the Weekend"; O month of and
	3
220	11 outputs "Looking forward to
	the Weekend"
Long	in more in millioners at your thing will -
	C+ Lalbile Loop and actions process 200
51/ a	Loops can execute a black of code as long as a
	Specified Condition is reached
	-anitani
	Loops are handy because they save time, reduce
	errors, and Other make adde more regdable.
	have and the District
	The While loop loops through a block of code as
er e	The state of the s
	I would want for all areast it
	Syntax
	The state of the s
	While (Condition) }
	11 code block to be executed
	3 P Cook 10 Junio
	0 0 0 0201
	" pohysites is report " as went

1

_	Example 7	14.14/4 - 1 25 April .
		1 441
	int i = 0;	\$ 1
	While (i < 5) {	(f 23)) apply
	cout << i << "In";	
	j++;	
	3	i sing nil sel
	continuities of in the	word was valued as he
	C++ Do/ While Loop:	
		x o land
	The Do/ While Loop	
	,	For Chalestream 1: Chales
	The do/ While loop is a	variant of the While loop.
	This loop Will execute	the code block once before
	checking if the Condition	on is true, then it will
	repeat the loop as 1	ong as the condition is
	true.	O grademax?
	Syntax	(++1 1251 : 9 = 1 + m1) m2
	U	111 m 24 55 55 55 60 mm
	do 2	3
	11 code block to be ex	errited
	3	sand Lought
	While (condition);	Erand-is
6-9.	hove eller seal a orale	de stricted with si-12
-	Example 1 - post harman	o rado: Si satr post
v-5	inti= 0; or hadanas and	
	do & Manar - ranio "	and the mineral deep

	LOUT << i << "\n";	
	itt i	
	3 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	
	While (145);	
	211 y 1 22 1 22 1 1 1 1 1 1 1 1 1 1 1 1	
	101 24 T 1 WHOLE THE 247	
	C++ For Loop:	
	Use the For loop instead of a while loop.	
	i man f affilia larg tel	
	Syntax	
	Cool attitle of all	
	For (Statement 1; Statement 2;	
- DV30		
control		
00100		
at.		
	Example 1	
	For (int i = 0; i < 5; i++) {	
	LOTH KEIKE "ID":	
	3	
	I cooks block to be executed	
	Nested Loops	
	· Consistent & water	
	It is also possible to place a loop incite another	200
	Loop. This is called a nested loop	
	The "inner loop" Will be executed one time outer loop"	far

	Example 7
	// Outer loop
	For (int i=1; i < = 2; ++i) }
	cout Le " outer: " Le i ex "In";
	11 Executes 2 times: wingsom? boys yourself it?
	- Land - Black deposits
phi	// Imer loop
$\mathcal{H}_{2}(t)$	for (inti=1; i <=3; +ti) {
	COLIT KE " Tomer: "KKI KKI LAMED 12 -1-
	"In"; // Executes to times (2 * 3)
500	of the training the same and and
	3 the same of the same points points some
	The Foreach Loop - shumovil
	V 1
	There is also a "for-each loop" Which is used
	exclusively to loop through elements in an
	array.
	3
	Syntax : "m/" 33 / 25 412)
	Š
	For Ctype variable Name:
	anagyriame) } (amplypera
	Code block to be executed
37	or from the same sugar sugar sugar sall
11/10	muridan han mann dillera belland a
	Example I was not not continued there and
	A STATE OF THE STATE OF THE SALE OF THE SA
	Int my Numbers [5] = {10, 20, 30, 40, 50, 3;

	For (int i: my dumber) }
	COUNT CE I SE " IN";
	\$ smel control \
	1 / 120 - 1 - 1 F - 1 - 2 1 - 2 1 - 2 1 - 2 1 - 2
	1" ment 35 1 35 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Ett Break and Continue:
	George Chalana and Land Land
	OF this tutorial. It islas used to "jump out"
	of a Switch Statement:
	Carryon I Francisco (a styron (2 t 5)
	The break statement can also be used to simp
	OTH OF a look
	Examble 1
440	For (int i = 0; i < 10; i++) }
	y if (i == 4) of speciment can be musiculared
	break:
	3
	(OIH << ! << "\n":
	3
	2 sandanthereau sans 3 will
	CH Continue
	Latercard and at most shortly
	The continue Statements breaks one iteration if
	a specified condition occurs, and continues with
	the next iteration in the loop.
	The Library San Programme Control of the Control of
1.5	and administration of an it - fixt and marketing the

```
Example 1
  For (int i = 0; icto; itt) {
  If (i = = 4) }
  3 Continue:
                    2 11478 35 7 55 How
  Cont <<! << " Yout!
                          France ( Tr )
 Break and continue in White Loop
 mental provided type howard ablained by worth
  Use break and continue in while loops
 Break Example 7
 int i = 0: 1 1802 horn swined found
 While (1x10) { Almosto il surmala
  COULT EXIST " ;
 } break;
  at the start of terminal winds and march
 Continue example 722 value
tot 1 = 0 is soft presented accompany and
 While (1<10) }
  15 (i = = 4) {
```

	itt; [] same vil
	Continue;
	3
	COLH << i << "\n" :
_	itt;
	}
	1 H part 4 25 125 description
	\$ 1
	C++ Arrays
	Accord and the first
	Arrays are used to store multiple values in a
	Single Variable, instead of declaring separate
	variables for each value.
	To declare an array, define the variable type
	specify the Name of the array followed of
_	Square brackets and specify the number
	Square brackets and specify the number of elements it should store:
	1 to 1 22 th 1/4 1
	String Cons [4];
	\$ (p = -1 1 - p
	Access the Elements of an Array
	index number traits as the referring to the
	index number Inside square brackets [].
	palmore prockets [].
	This statement accounts
	First element in cars:
	Triot Carment In Coas: Francisco
	3 7 pe = 23 30

	Examble 1
	String cars [4] = {"Volvo" "BMW"
	"Ford" " Mazdo" 3: T" " " Hope" " " Hope"
	Cout << cons [0]; (mi 12 si 1 a = 1 mis ra
	// OUTPUTS VOINO 2507 "22 177 2000 23 1000)
	3
	Change on Array Element
	Strike spread stand will
- : :	To change the value of specific element,
	refer to the Index number ward with
_	
44.2	minimistrations [0] = "Open": 2 21 religion = 1
	Example 1
	Example I
	String cors [4] = { " volvo" , " amin"
	· Ford", "marda · 3;
	(one Tol = "oper";"
	Court << cars Fol;
	Maw althoute open instead of
	VOVO. " 1000 4 " 1000 " 3 = 107000 coice
	prosess and the sold of the
	Loop TE
	Loop Through on Array
	Loop through the array elements with the

4	Example 1
	String cars [5] = 2"volvo", "BMW",
	"Ford", "Mazda", "Tessa"?
	for (int i = 0 ; i < 5; i++) } [[]
	COUL KE CORS [i] KE" IN";
	}
	The board of seconds
	C++ Omit Array Size:
400	The series of the series of the series of the series of
	Omit Array Size former what with the region
	The compiler is smart renough to determine
	the size of the array based on the number
	of inserted values:
	The last the same and the same
	String (ars [] = { "Volvo" } BMW" 2000 miles
	"Ford (1) 3: 11 Three array " elements " Lor"
	V: 1/1/01 = [0] 2001
	Example 1 : (a) acas ss see
	The English was surable with the
	C. L
	: / Also three array
	elements.
	The took seem to small want
5.A.	-18 Company Co
	-1131 N = 24 The symmetry of the state of the second of th
	The said of the said

	C++ Array Size
	$\sum_{i=0}^{n} (i + 1) \int_{\Omega_{i}} dx = 1 \int$
	Gret the size of an Array (predominant) loves
	0 236-11
	To get the size of an array, you can use the
	Example 7 : 1000 formaning - issum 40
	40, 90, 3:
0	COLH LC Sized (myrlumbers); Complement - island
194	Result : severe tombosomin - illurer a analysh of
	120 - 40 more and Though some ordered
Way	of 1911-192 district dissigned arranged the harmonest
6 6000	Loop Through an Array With size of ()
281	hatter to the land or and there
	In Arrays and Loops chapter, whe wrote the size
	of the array in the loop condition (ics).
	This is not Videal, since it Will only Work for
	arrays a specified size.
	Description of the second of t
	above, We can now make loops that Work for
وأوروا	arrays of any size, which is more sustainable.
EQUARTS I	Example 1/4 and pure The month of war
	int myrlumber [5] = { 10, 20, 30

	40, 503;
	For (int i = 0; i <
	Size of (my Numbers) / size of (int);
	i++) { (++i
- wale	COUL << myslumbers [i] << "\n";
	E De morage (2 Trans
	C++ Multi-Dimensional Arrays:
	The state of the s
	MUH - Dimensimal Arrays [2] melandiarar da
	18,060 04
	A multi-dimensional array is an array of arrays.
	The state of the s
	To declare a multi-dimentional array; define the
	variable type, specify the name of the array
	Followed by square bracket Which specify how
	many elements the main arrays has followed by
	another set of square brackets hillich indicates
- 200	how many elements the sub-arrays have.
	22 12 Delitors and in our continued and no
400	String letters [2] [4]; and and a significant
1	String letters [2][4] = {
	3" B" "B" "C" "D" 3
is the second of	\$ "Ex." "E" "Q" "H"3 money and anima will
1-0	3; wet with want over man and the bands
	mineral and of firstly and was the source
14/19/2	
	Arrays can have any number of dimensions. The
	the code becomes.
	$n\epsilon = n\epsilon = n\epsilon + ray = dem (equal tri)$
	121 2200 1915 201

	String letters [2] [2] = {
847	I former warmen on to anyther with some of
5.54	To 1 "A" "B" Surger with to redoriver raped
	{ "c", "D"}
	3.
	S and the state of
	{ "E" "E" }
	{ "Gu "Hu} E= TuT Tet mount potent
-	The same to the sa
	3;
	\$ "H" "0" "2" "3"}
	Access the Elements of a Multi-dimensional Array
	[
	To access an element of a multi-dimensional
	array specify an index number in each of the
	This statement accesses the value of the element
	In the first row (o) and third column (2) of the
372	letters a gring for mile - war in day and made and
	because sends not to not fast and trace
	Example 7
	The state of the s
	String letters [2] [4] = {
	O to the common & = Tot) for a poster parties
	\$"A" "B" "C" "D" 3
	{utu ntu ndu "Hu } }
	3:
	CONH << letters [0] [2]: // OUHPUTS "C"

egmd2	e Elements in a m	uli-Dimensional Array
index	number of the el	m element, refer to the ement in each of the
dimen	sìons.	\$ 0 gr + + 3 + 3 = 1
Examp	ye I	3
	1etters [2][4] = {	Super uper S
	"B", "C", "D", }	: 3
remotilities	men nen Hu 3	agreement of and country of
		12 mm 220110 of 1
	" To bosteni "S"	Nown Diversion Room
	Through a Multi-dim	
To 1	- itum a devandt goo	he array's dimensions.
Examp	Ne 7	Tit (it) season makes
(5)	18" "C" "D" 3.	early regressions was \$ 1
٦ { ;	E"," F"," G", "H"3	top to regard may end
for Cir	# i = 0 : i < 2 : i++) }	7107 200401 1/2 200

,97	For Cintil = 0: i < 4: 1+1) & respectively of
	"In";
	2
	3 Armount A E tours
	anisometrical anisometrical
	realização \\
	July Multi - Dimensimal Arrays ?
	1914 dimensional arrays are great at representing
	grids. This example shows to procured the
	for them. musi - dimensional array to represent
	a small some of Battleship.
	0
	Specificant and Specifical Section 121 Section 121
	CH Structures (Struct)
	the part west in morte in the amelinean assistance of
	CH Structures
	Structures are a halpy to group several related
	variables into one place. Each variable in the
	Structure is known as a Member of the
	Structure.
	U. F. diensel
	Unlike an array, a structure can contain many
	different data types (int, string, bool, etc.)
	Casate a Structure
	In extendersor of south south As
	To create a structure, use the struct keyword
	and declare each of its members inside with
	braces " Hereby merely " = puring poor . " minere to be a
	0.0

Limb

	The declaration, specify the Name of the Structure
	variable (mystructure in the below example)
	Structure // Structure
	declaration
	int mynlum; // Member
	Cint Variable) trouved tomismount & Hath all
pritie.	String myshing; / Member
4	(String Variable)
1000	3 my Structure: 1 structure
	Variable interest in some times A
	Access Structure Members
	(the Strainger (Spring)
	To access members of a structure, use the dot syntax (.);
	Example I consider group of world to soon supplied to
	1/ (reate a structure variable
	called mystruature
	Struct & O
	int myolum; (a) special of special additional
-D	String mystring;
	3 mastanchine;
	Company a special
	// Assign values to members of
be	mystricture all more and account in
allyte.	mystructure · myrlum = 1;
_ <i>L</i> ii	mystructure. mystring = "Hello World!";

	Therefore the control of the second of the s
	print members of mystructure
	cout << mystructure. orgalism cc
	71 3 40 11 4
	100 pg 767 CF 1902
	Cout << mystructure - mystring <<
	"\n"; 0 0 0 0
	the transfer of the same of th
	One comments in multiple will be
	One structure in Multiple variables 100 H)
_	
	Use a comma (1) to use one structure in many
= 10	Noughbles.
27/42/3	a new of a commonwar in the additional account in
10	Struct & will have a si if home and many
	int midum
	String mashing:
	3 mysthate mystructs, "mis" = had and
	mystalitz; // muttiple structure
	Variable Separated With Commas
	had at mobilize
	THE RESERVE TO SERVE THE PROPERTY OF THE PROPE
	Named Structure
	Lagrange Company
	By giving a name to the structure, you can
	treat it as a data type. This means that
134.5	you can create variables Islith this Structure
	any where in the program at any time.
	()
	To create a named structure put the name
	of the structure right after the struct keylolard.
	0

Structure is named "mystatape" Structure is named "mystatape" int mynum; String mystring; Creating References A reference variable is a "reference" to an existing variable, and it is created with the organization. String Food = "pizza"; // Food Variable String Grad = Food; // Food Example 7 String Good = "pizza"; // Olitputs pizza (out << food << "\n"; // Olitputs pizza (out << meal << "\n"; // Olitputs		to the second se
String mystring: C+ References: Creating References A reference variable is a "reference" to an existing variable, and it is created builth the animal variable and it is created builth the string of the string		Struct myData Type 3 /1 This
int mynlum; String mystring; Ctt References: A reference variable is a "reference" to an existing variable, and it is created with the analyse variable. String Food = "pizza"; // Food reference to food Example 7. String Food = "pizza"; // Food reference to food Example 7. String Food = "pizza"; // Olitputs Cout << food < "\n"; // Olitputs		Samely of a married " Transporta Type"
C++ References: A reference variable is a "reference" to an existing variable, and it is created with the organization operator. String Food = "pizza"; // Food Variable String Grand = Food: // Televance of the pizza of the		Structures is minuted () ()
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CH Memory Address : 2000 Williams Cosso I Soot to ratey Memory Address of the Local Address July 12 18 a) hear to searthin sonociece When a variable is created in c++, a memory address is assigned to the variable. And When we assign a U value to the variable, it is Stored on this memory address Use the & operator, and the result will represent hilhere the variable is stored. - responding to weather present and Examples String Food = " pizz a"; COUT LE GROOD; 11 OUTPUTS monograph and many OXEGERAL C++ pointers: ignormate and transmit a servented to Creating printers · Palatista Memory address, of a variable by using the a Operator: 50000 902 505 400 (500 450 A) Examples Correct resolver with the last to 1 4 min 55 max 35 12.03 String Food = "pizzo": 11 A Food

	cout << food: // outputs the
	(arriv) Lord 20 author
	COLH CK AFOOD: // OLHPHIS the
	memory address of food (oxedfed4)
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	CH Deference
	2.01 of 72 of post 24.45% - 34.65
	Get Memory Address and Value
	Use the pointer to get the value of the variable
	by using the * operator.
	Example
	Section = heat - pairt
	String Food = "pizzo": //
	Variable dealgration sugara is hands as that
	Stringt ptr = &food :
	Pointer declaration //
	1 4 Friedrich 11 1
	// Reference: Output the memory
	address of Food With the pointer
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	COUT KEPT KK "IN"; how is to stand the morning
	11 Deference: OLHPIH the value
	of food With the pointer (pizza)
	(OI)+ << * PAT << " \";
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	perfect with in withing
	D. To Movement

	C+t Frunctions:
	A function is a block of code lathich only runs
	Company of the state of the sta
miom?	they are important for reusing code:
	The state of the s
	Crease a Function
J. 6.7 1. 7 19 2 19	and the state of the state of the section of the section of
	Ctt provides some pre-defined functions, such as
GETTE	main (), Which is used to execute code. But you
	can also create own functions to perform certain
	actions most made in which and it
	# manuagetak 1
	Syntax
	O .
	Void myfimction () {
	3
	S (Lamera van
	1.60 mitpung/yee
	Example I
	11 create a function
	void myfunction() {
	? Cout & " I just got executed " L";
	int main () {
	my Function (); // call the

	return o; : monthantil +13
-	1 outputs "I just got executed!"
-	
	Function Declaration and Defination
	· Declaration - The return type, the name of the function
	and parameters
	Precuse a Presentation
2/1	. Defination - The body of the function (code to be executed
200	void my Function () & // / / Addit Common
-the	declaration of sometimes man second agent mass
	1 the body of the function
	Cdefination
	Y Of Care
	G
	Example 3
	Int maines &
	myFunction ();
	retumo;
	}
	continued a second of
	void myfunction () }
	} cout Occ " I Trust got executed!";
	a a rel marin de metaja ne
	// Faror and was a company day

_	Parameters and Arguments	
de sal	parameters act as variables inside the func	Ha
	parameters are specified after the function name	16.
	Syntax Printed Landenstein Land	
	S Code to be executed Long the chical to be executed Long the chical to be executed	
	Example T "C" in 1 " V constant of the	
	Void myfunction (String Frame) { Coyl << Frame <	
	my Function ("Jenny); my Function ("Jenny);	
	return 0;	
	// Liam Refsnes // Terroy Refsnes	

Onto

	CH Default parameters
	Default Parameter Value
9,000	
	Example
	void myfunction (String country =
	int main () {
	myFunction ("India"); myFunction ("India");
	return 0;
	// Sweden 1("mnit") anima Port
	11 USA : Chiping I I I I I I I I I I I I I I I I I I I
	2002/42 1000 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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C++ Multiple Parameters:	
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Multiple parameters	
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as you tolong parameter you can add as many par	moeters_
as han mount.	
Example 1	
Example 1	
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age) ? Throwion (String Frame, int	
COLH & Frame & "Refores."	
s age cc " years old. In";	
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main C) 1 (Exally support)	
my Function ("Liam", 3);	
my Fernation (" Termy", 14);	
my Function ("Ania 7. 30): 2007 - 2000 1000 11)	
3 settimo:	
3	
// Liam Resones 3 years old.	
11 Jermy Refsnes. 14 years old.	
11 Anja Refsnes. 30 years old.	
f: atamp)(9	
CH REHAM KAMONG:	
I (short short short some the	
Return Values	
The void keyword, used in the previous pag	2
0	(3.3)

existing.

	1 (
	Indicates that the function should not return a
	The state and the state of the
	value instead who Eurochan
	Keyword inside the Function
-	Example 7
	int my Function (int x) &
	Terum 5+X;
	1
	int main () man arrived) metarmiture flow
	int main Orl
	cout a mytimation con
	Le des es " years Mid. Sant State of the sant of the sant of
	11 OIHputs 8 (5+3)
	If E threat I melanidime
-	
	CH Functions - Pass By Reference
	i Gameste
	Pass By Reference
	This can be useful when you need to change
	the value of the arguments
	Ma conje de apprehage a lord
	example I
	: brokers receive Q 47.
	void swappyums (int &x, int by) }
	int $z = x$;
	x=9:
	ing the Zieners with it have browning fine will
	123

· In	nt main () {
	int Firstrum = Lo ;
	int Secondalum = 20;
	Cout << "Before Swap: " <<
W	10"; 18 150 W. 3 = 13" and making to 1-1
	COLLE << FirstNum << Secondnum
14	"\n": If southered town I realism there
	O to come a O
1	(all the function, Which
	I change the values of
HYS	strum and secondalum
	Swappiums (First Num, Second Num); 117
	The state of the s
(OUT << "AFTER SWAP: " << " In " ; continued
	out << first Num << second Num
	"In"; whitehers well to sent me trained
	or town with Little whiter comes and sever
3	return 0;
	p algroups:
CH	Constant and Const
7.11	pass Array to a Function?
0	2 milion & constraint attent
tas	is Arrays as Function Phrameters
c	
LXO.	mble 1
Vai	d mytimetion (int myNumbers [])
-3-	O . O

For (int i = 0; i < 5; itt) } 3 cost << mynlumbers [i] << " \n"; SS - muchanosa tra int main () } >> " : opened and ">> dian int mynlymbers [5] = { 10, 20, 30, " " = 1" 40, 50 3: V wouldhow as 22 mily will 25 2000 myfunction (myNumbers); "0/" Freum 0: dille a period and real is To parille and served uses milking is how milaters CH Function Overloading intered and Function Overlanding : Down - 1979 millahr (12 51 miller first st. Just function overloading, multiple functions con have the same name with different parameters: Example 1 int my function (int x) Float Traffimetion (Float x) a of more and the double my function (double x, double & Experience emissioned an invorced ordi CH Reumaion Recursion is the technique of making a function 7198ti 110)

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	This technique provides a way to break complicated
	Problems down into simple problems which are
	casier to solve.
	Francisco de la
7	Example 7
-	Service of persons form yearly at a 15.2
-	int sum (int K) }
-	if (K>0) }
_	TEHIND K + Sum(K-1); of saled land
	in) from eige for them " manual toward toward
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	Links mill among of outposts is more or a
	3 oher was dilly amount to a
	La complete de la com
	int main () ?
-	int result = sum (Lo);
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_	Andrews and Antonian - Antonia
	C++ OOP
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j	C++ lalbat is OOP?
	Cir lalbat is Ook s
	000 00 - 1 0 0 000
	Oup stands for abject - oriented programming.
-	The second of th
_	Procedural programming is about whiting
-	Procedimes or I functioned that perform I operations on
_	the data, white object - oriented programming is about
_	1.0.
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Larent	creating objects that to	minim both data or	d
6.	- //	and the state of the state of	B.L. Proof I
	tructions		7
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	Advantages Over Procedu	- prigramming	
	O many	10	Proney.
	• Oop is Fager and easier to execute		
	· oop provides a clear structures for the		
	programs Fraction of the contraction		
	. Oop helps to keep the		
			3 cala
	"Dont, Repeat Anniet," and worked the code		
	• Doo essere is or main	and Thodis and	depilo
	· Oop makes it possible	to create NFIII ~	eriedfie
	applications With less	code and shorte	Y S
	development time.		
	For a characteristics		
	" Patt come = thmen int		
	C++ lalbat are classes and objects?		
	Classes and Objects and II		
	chiest - mieruel are the two main aspects of		
	opiect - ariented budramming.		
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	Class	Objects	HAN.
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C++ classes	/ Objects	
Asamis	with eff believe should and	
CH IS ON	opiect - oriented brodramming toudinds	6.
Everything	in (++ is associated With classes and	
objects ale	of With its attributes and Methods.	
For example -	Vin real life, a can is an object. The	
con has a	Aributes, such as Weight and color, or	n
	uch as drive and brake.	
	Not some at all can conserve	
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Create a CI	086	
	to Marriage	
No. Ha	class keyword.	
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Examble 5	22437A 11 : 27/40CT	
01		
class myclas		=
Class U	t anatomas (an)	_
briplic:	// Access percental - Mudicalis	_
Specifier	Catalogorale profess 3 sandings	_
int my	nlum;	_
Attribute G	ht variable)	_
enires	myString: // Printers and	_
	Stling (variable)	_
Attribute 0		
Attribute 0	O a relationer da Com in	

	Create an Object : many horse season to
	To ct, an object is created from a class who have already created the class named
epun.	myclass, so now we can use this to create
	Street, which is a series of the single series
260	To create an object of mydass, specify the
00/1-	class name. Followed by the Object Name.
	To access the class attributes (myolum and mystring), use the dot syntax (.) On the object
	220/7 A 54099
	Example 1
	honoged 220/1 and 237
	class Myclass ? 11 The
-	Class C
	Public: 11 Access
,	Specifier will a sephyto south
	int mynlim;
	Attribute (histring; //)
	Attribute (String Ovariable)
	int main () } (Continue of a section A
	object of mychoss. Il create an
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	// Access attributes and set values

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	15 11 11 - (10-1-1-10-10-10)
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// print attribut	
	my sum << "/m";
()	mystring .
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ettributes	Par IVIII POINT
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Class (an 1	: 2 hred type 220/1 44)
Public	
String brand;	shadtoso sand
string model;	
int Odean:	south amiliary sen pursing
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carabi-2-brand = "Ford"; " = "
carobi 2. model = "Mustang";
carabiz. year = 1969;
againer washing briefly
// print attribute values on deer as deep
cout ex carobit brand ex " " Exert si aus
carobit · model << " " << \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
carabit. Hear <<"\n";
cont << coropis promo << " " <<
carabia, made) << " " <<
carobia. year << "\n"; 2007/10 alouring
returno:
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20415440
C++ class Methods:
121.00
Class Methods
· Istom Ballion
Methods are Functions that belongs to the class.
Ther are two Ways to define functions that
belongs to a class.
O 11 Corners on the corner of the corner of the
Inside class defination
Outside class defination * * * * * * * * * * * * * * * * * * *
* # spit = labora - Liveral
the define a function inside the class, and
name it "my method "
I was to trade where we have I
The transfer of the second of

	Toside Example 1
	most out assume
	class myclass ? II The
	class U Married Contract of the Contract of th
1	Public: 11 Access
-	Specifier
_	Void mymethod () { //
4	method / Function defined inside
	the class sandle go thing
	COLIT KE "Hello World! ": " Hello World ! "
	() tolored
	3;. © mater
	State of the state
	int main () {
	object of myclass
1	
1	myobi my method (); // call the money
1	method)
+	S SEHIMO: < CONTRACTORY OFFILMON OF
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-	
	Outside Example 7
	* Midest
	- Midest
	class myclass & : (//=Therome (a)) has an int
	class myclass & : (1)-Theorem (a)) have to
	class myclass & : //-Theorem (a) have to
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	class myclass & : // The nor or in the control of the class of the cla
	class ryclass \ : // The order (a) \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \

Vold Myclass	s:i mymethod () {	f 200/2000 120
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	2201)A (1	
	the law of the D	
int main ()	1 Water boots	onger Hall
	myabi: 11 create ar	7 1
1.1	reclass.	
myobi.m	yntethal O: 11 can	Hthe man
method ()	
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Parameters	Committee to the	- protion
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Example]	rent W 123 Levelage	deminores
1 7		D. Dain
# include Li	< CTD9 x 120	1 A commence
wing names	space 6th;	
0	in the to be a	bookings.
class con i		Mammal ables
Enpire:	<u> </u>	
int speed	(int maxspeed);	B DERTHAN IN
3:	I a manage	r D 22
int con: : spec	ed (Int masspeed);	1 152063
geturn max	uspeed;	viii.577
3	Comment of the said	Anting Line
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	car myabi; // create an abject
	of card and and and and and and and and and an
	(out << myshi-speed (200); //
	call the method with an arguement
	TEHAN O:
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-	2 cisagona atualars
	CH (onstructors :
24	Frank Company of the property of the contract
	Constructors To did a Constructor of mounts
	and of the wall wanters while and water
	A constructor in c++ is a special Method that is
	automatically called When an object of a class is
-41	the league controlled the soll that the continuous and
	To create a constructor, use the same name as
	the class, followed by Parentheses ():
	Example
	CANTING TO THE STATE STATE
-	
-	Public // Access
-	Specifier the distant is honored poring
-	Myclass () 3 direct // · labore writes
_	constructor wint it is a court and
	COUT KK " Hello Inord!"
	Charles when many N F. C. 5
	3: Our application of the president of the special or and the second of the second or an application of the second or application of the second or an application of the second or an application or application or an application or an application or an application or application or an application or
	int main () }
	THE MIGHT CALL

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	Myclass myobi; // create an
	object of mystass (this Will call
	the constructor) there have been so the
	return O : one was the santales will the
	3 Testania Company
	C
	Constructor parameters
	1 200/10/92/mil William
	Constructors can also take parameters (Just like
	regular functions), which can be useful for
	serting initial values for attributes.
gi anali	
27 270	
	constructor With different parameters. Insid
	the constructor we set the attributes equal to the
title steed	Constructor Parameters (brand = x)
	The chart Laurence L. Downshores () :
	Example 3
	class can { // The class
	STATE OF THE PARTY
	Public: 22 1 Access 1 22 10 10 10 10 10 10 10 10 10 10 10 10 10
	Specifier Regard W
	String brand: // Attribute
	String model: / Attribute
	int Oyean; // Attribute
	car (string x, string y, int
	z) 1 // Canstruktor With
	parameters
	brand = x;

25	con = Z:
3 0	Company of the Compan
3 ;	DININA NO DESTRUM
int main ()	See the supposer against
// czenie c	car objects and call the
(onethictor)	dith different values
- SCHERE	outh attrested values
ar carolii ("	"BMW" , "X5" , : 1999/) 32400 7 17)
) sidoro) re	"Ford", "Mustang",
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// Drint va	lives Industry In warmen will
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	Kening wards and side worden
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Carobiz. Hear	
return 0:	
actority 6	20 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -
7 7	of the fields were the second of
20.	The Mark and "
+ Access Spec	cifiers:
	J. 20/2000 x 2
Access Specifie	as
you are quit	te familian with the public Kerw
that account	in all of our coss examples. The baptic ream

	Ctt Inheritance:
	4-1/248 400000
	Inheritance
	In ctt. It is possible to inherit attributes and
	mallale Com one class to amother wie
	group the "inheritance (mcept" into two
	indones.
	· derived (1935 (child) - the (1955 that inherits
	From mother class
	• base class (parent) - the class being inherited
	The continued the service of the
7=	To Inherit From a class, use the : symbol
	In the example below, the car class (child)
	inherits the attributes and methods from the
	vehicle class (parent):
	and wante of allower last breakings of it a
211111	Example Transcon - Francisco 20 security
1270 40	
	class vehicle {
	Public: sent do relegion de
	yoid honk () }
	Cout << " Tout, tout ! \n";
0	3.
	3;

	private: : = yestimate # 42
	// private attribute
	int salazy:
	0
1	Public:
i	I setter if word and alcome
	void setsalong (5) {
	Salary = 5%
	3 0
	3;
	int main () {
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	. It is considered good practice to declare your class
	attributes as private. Encapsulation ensures better
	The state of the s
	control of your data, because you can change one
	part of the code Without affecting other parts.
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_	Tricreased Security of data.
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	Example1
	class myclass { // The class
	Specifier
	3: " class members goes here
	2-May regard the Alles Superintegers
	C++ Encapsulation: "21" " " " " " " " " " " " " " " " " "
	Encapsulation
	The meaning of Encapsulation, is to make sure that "sensitive" data is hidden from users. To achieve this, you must declare class variables / attributes as private. you can provide public get and set methods.
	Access Private Members
	" Get methods.
	Example
Lear	## include <iostram> using namespace 5t4;</iostram>
	Unse Employee &

void my Function () } cout Occ " some content in parent class; return delivery W. Favrice. 11 Another base class class myotherclass Public . Void myOtherFunction () } COUT & " Some Content in mother class "; }; 11 Derived class : 2110000 -101 class mychildclass: public malazes Myclass, Public myotherclass ? \$ 60 mediazioni but int main() } executed invitor Mychildclass myobi; myobi my Function (); my obi. Byotherfunction O: Setum 01: · Morar ramonagana CH Inheritance Access 15 Meroto 24 33 863 a may apple a place

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	}; . "= plant = labore anish	
	"Derived class (child)	1
	Class Mychild: public Myclass ?	
	3: Grand ton	
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	11 Derived class (grandchild)	
	class MyGrandchild: Public	
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	int main o {	
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	Using a comma-separated list.	
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	enived class			
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2 5	tring model = " m	i "emptana";	-	7
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	cout << "The pig soys: wee	-
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implementation of	hey also have their own
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	Example 7 rolumni:
_	
_	#include (iostream)
	# include (Fstram)
	Luz grossword central
	There are three classes included in the fistream
_	read Tiles.
	inverse30
	Class Description
	Offeream Creates and Whites to files
	iferream Read From Files of it and
	Estream A Combination of afstream
	and issum: creates reads,
	and united to files.
	appl n Local
	Create and Write To a File
-	more of all region and will a next from it.
	To create a file, use either the astream or
477	foream class and specify the name of the file.
	To Write to the file, use the insertion operator
	the will all to depress and white at him

1 1

	Example 1
	# include < isstream >
myseye	using namespace Std:
207	int main () { // crease and open a text file
	My File (" filename - +xt ");
	My File K" Files can be tricky. but it is fun enough!"
	// close the File
	3 MyFile - close (); market have
	Read a File
E C	For read from a file, use either the ifgream or stream class, and the name of the file.
417 En	Note that we also use a While loop together With the getline () Function (Which belongs to the issuerom (1935) to read the file line by line and to print the content of the file.

_	
Example 1	and the second
11 create a text String	19. Which 18
used to output the	Stext file no moroans
String myText;	of this set set old will
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11 Read From the	text file
ifstream	Hotel Loop pel HM
MyReadfile (" Filename	2 · +xt"):
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the getline () function	
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myText)	
1 ()	Shakusun period
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3	THE PROPERTY OF THE PARTY OF TH
11 close the File	-110 toperations stated and
MyReadfile · Close ();	-1685 and of infant to desir!
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C++ Fxceptions	<i>u</i> -
The Legis on Service	world from the set set
CH Exceptions	(2) E (1)
1	1 3 1 1 3 2 2 4 T
When executing the	code, different errors con occu
coding errors and	e by the programmer, errors
due to wrong in	put, or other unforeseeable
The property of	THE COUNTY OF WITH ATTESTED BY

	than exception; // Than on
	exception When a problem arise
	3 Learn of Kropieri ariae
	catch () {
	11 Block of Lode to handle
	errors
	3
	Handle Amy Time of Excentions ()
	Handle Any Type of Exceptions ()
	If you do not know the throw type used in the
	try black you can use the "three dots" syntax
	() inside the catch block, will bondle
	and the or exception.
	Example 7
	- Courtles 1
	toy
	int age = 15;
	if (age > = 18) }
	cout << " Access granted - you
	are old enough,";
	} else
	throw 505;
	3
	3
	catch () {
_	cout << " Access denied - you must be at least
	18 years old. \n";
	3 0

E 3/0/mail thires. When an errors occurs, at will normally stop and generate on error message. The Technical ten For this is: (++ will throw an exception with first golf front house is C++ tray amd catch If "did . sorograff " Validhos Susa Exception handling in ctt consist of three keywords: try Othrow and catch: r ist managed to written and The try statement allows you to define a black of code U to be tested for errors While it is being executed The throw Keyword throws an exception When a Problem is detected, labich lets us create a custom error. The catch statement allows you to define a block of code to be executed it on error occurs in the try block. The try and catch keywords come in pairs. Example 1 11 Block of code to to