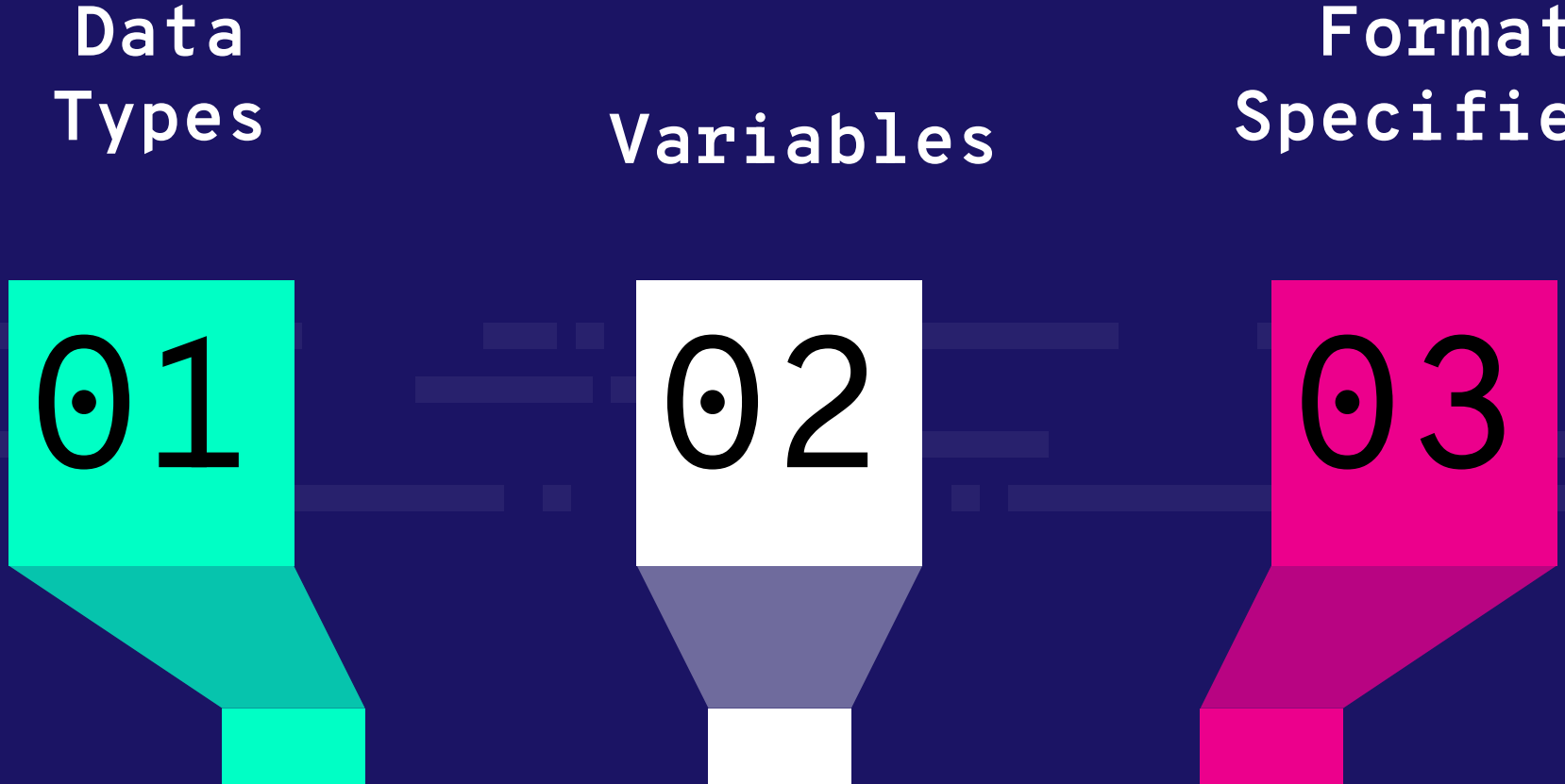
C LANGUAGE LECTURE-4

NOTES INFORMATION

ALL VIDEOS HAVE SEPARATE NOTES , WHICH ARE ON THE TELEGRAM CHANNEL.

TELEGRAM CHANNEL LINK IN THE DESCRIPTION

WE DISCUSS IN THIS VIDEO



01

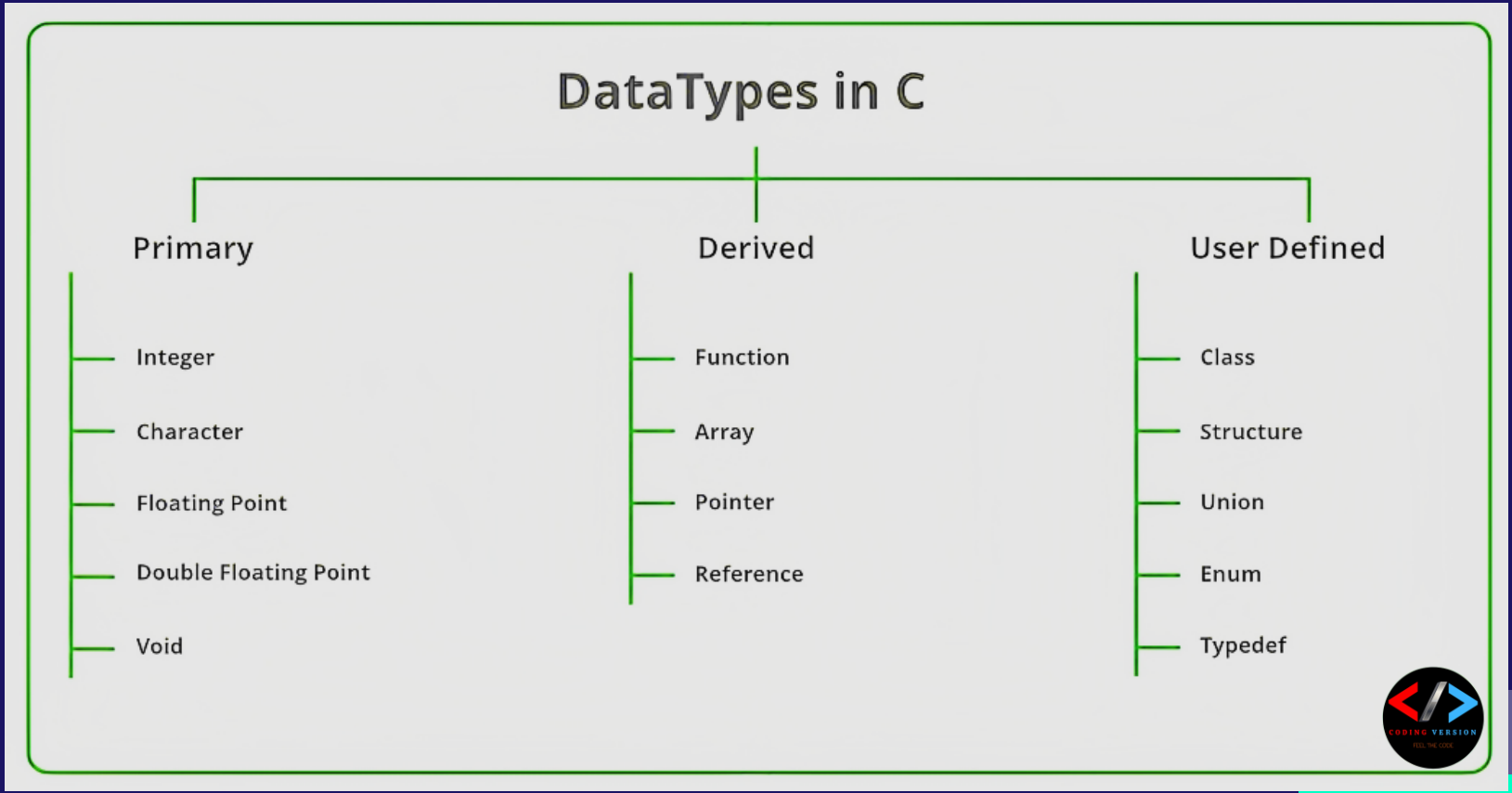
DATA TYPES

DATA TYPES

- It specifies the type of data that the variable can store.
- It is a type of container to store data.
- There are three types of data types in C language:-

a. Primitive Data Type
b. Derived Data Type
c. User-Defined Data Type

DATA TYPES IN C LANGUAGE



SIZE & RANGE OF DATA TYPES

Type	Size (bits)	Size (bytes)	Range
char	8	1	-128 to 127
unsigned char	8	1	0 to 255
int	16	2	-2^{15} to $2^{15}-1$
unsigned int	16	2	0 to $2^{16}-1$
short int	8	1	-128 to 127
unsigned short int	8	1	0 to 255
long int	32	4	-2^{31} to $2^{31}-1$
unsigned long int	32	4	0 to $2^{32}-1$
float	32	4	3.4E-38 to 3.4E+38
double	64	8	1.7E-308 to 1.7E+308
long double	80	10	3.4E-4932 to 1.1E+4932

02

Variables

VARIABLES

- It is used to give a name to a memory location.
- It is the combination of Data Type and Identifiers.

Variable = Data Type + Identifiers

RULES FOR DEFINING VARIABLE IN C

- Can contain alphabets, digits and underscore.
- A variable name can start with alphabets and underscore.
- Cannot start with digit.
- Keywords and whitespace are not allowed.
- Cannot use symbol other than underscore.
- **Valid Variable**:

```
int code , char c1 , float _sum34
```

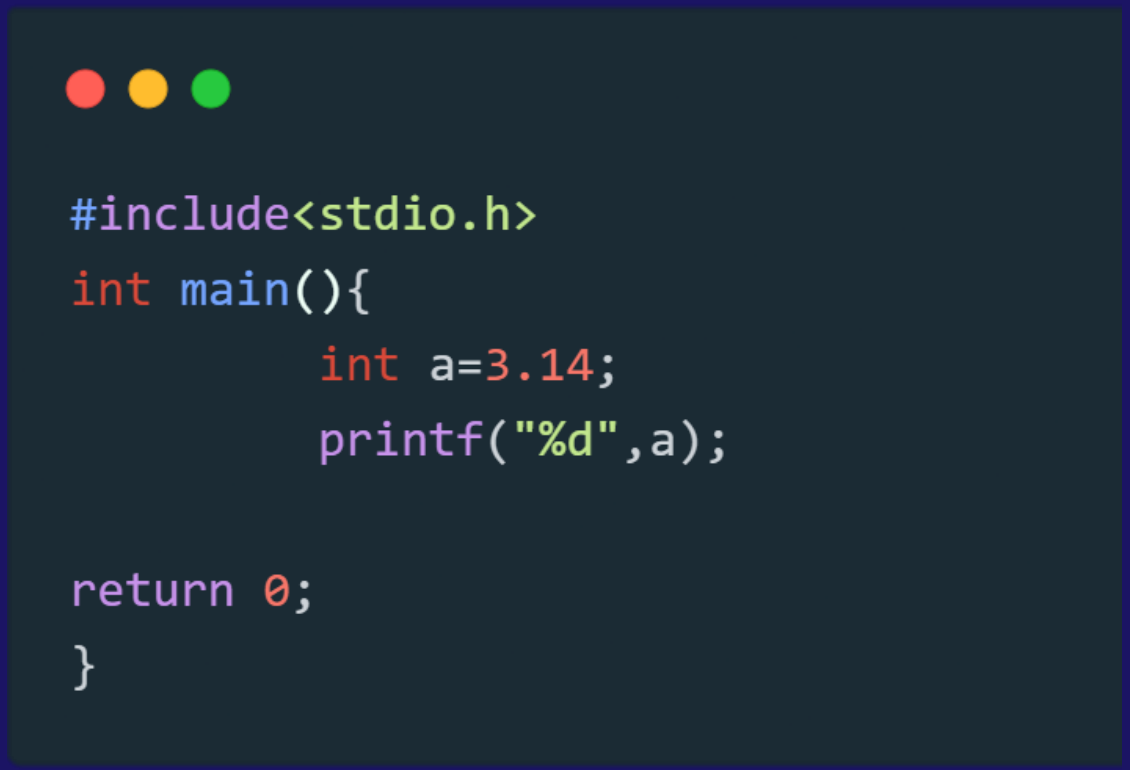
- **Invalid Variable**:

```
int 9var , int data type , int a# ,
float const , char $div
```

Declaration of Variable

```c
#include<stdio.h>
int main(){
        int a;
        scanf("%d",&a);
        printf("%d",a);

return 0;
}
```

Initialization of Variable



```c
#include<stdio.h>
int main(){
        int a=3.14;
        printf("%d",a);

return 0;
}
```

LOCAL AND GLOBAL VARIABLES

LOCAL VARIABLES

Local variables are variables that are declared within a specific scope, such as inside a function or a block of code.

GLOBAL VARIABLES

Global variables are variables that are declared outside of any function or block of code.

LOCAL AND GLOBAL VARIABLES

LOCAL VARIABLES

```c
#include<stdio.h>
int main(){
        int a=4;
        printf("%d",a);
        {
         int a=9;
        }
return 0;
}
```

GLOBAL VARIABLES

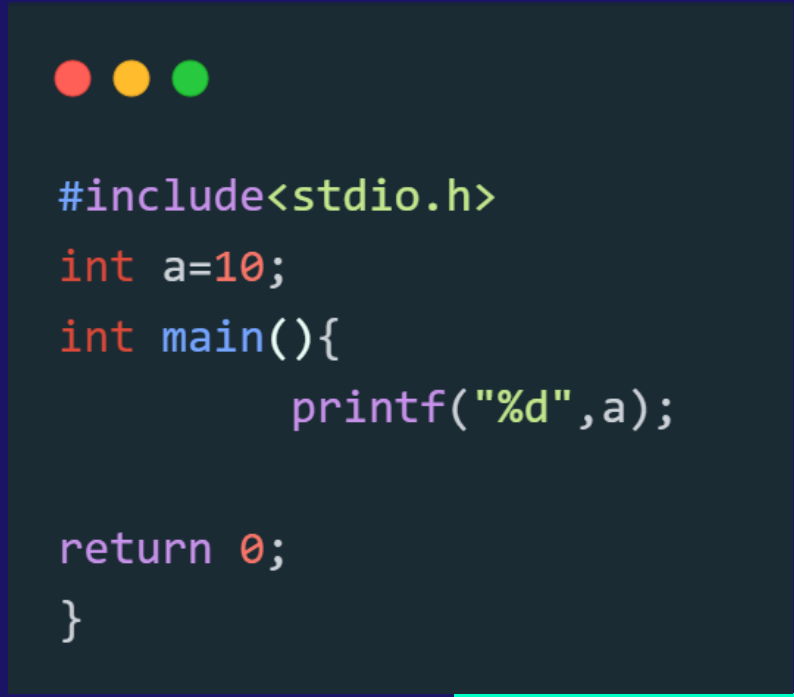
```c
#include<stdio.h>
int a=10;
int main(){
        printf("%d",a);

return 0;
}
```

03

FORMAT SPECIFIERS

FORMAT SPECIFIERS

- The format specifiers are used in C for input and output purposes.
- This helps compiler to understand which type of data is used during taking input and printing output.
- They are used with string literals or in place of it.



List of Format Specifiers in C

Format specifier	Description	Supported data types
%c	Character	char unsigned char
%d	Signed Integer	short unsigned short int long
%e or %E	Scientific notation of float values	float double
%f	Floating point	float
%g or %G	Similar as %e or %E	float double
%hi	Signed Integer(Short)	short
%hu	Unsigned Integer(Short)	unsigned short

List of Format Specifiers in C

Format specifier	Description	Supported data types
%l or %ld or %li	Signed Integer	long
%lf	Floating point	double
%Lf	Floating point	long double
%lu	Unsigned integer	unsigned int unsigned long
%lli, %lld	Signed Integer	long long
%llu	Unsigned Integer	unsigned long long
%o	Octal representation of Integer.	short unsigned short int unsigned int long

List of Format Specifiers in C

Format specifier	Description	Supported data types
%i	Signed Integer	short unsigned short int long
%p	Address of pointer to void void *	void *
%s	String	char *
%u	Unsigned Integer	unsigned int unsigned long
%x or %X	Hexadecimal representation of Unsigned Integer	short unsigned short int unsigned int long
%n	Prints nothing	
%%	Prints % character	