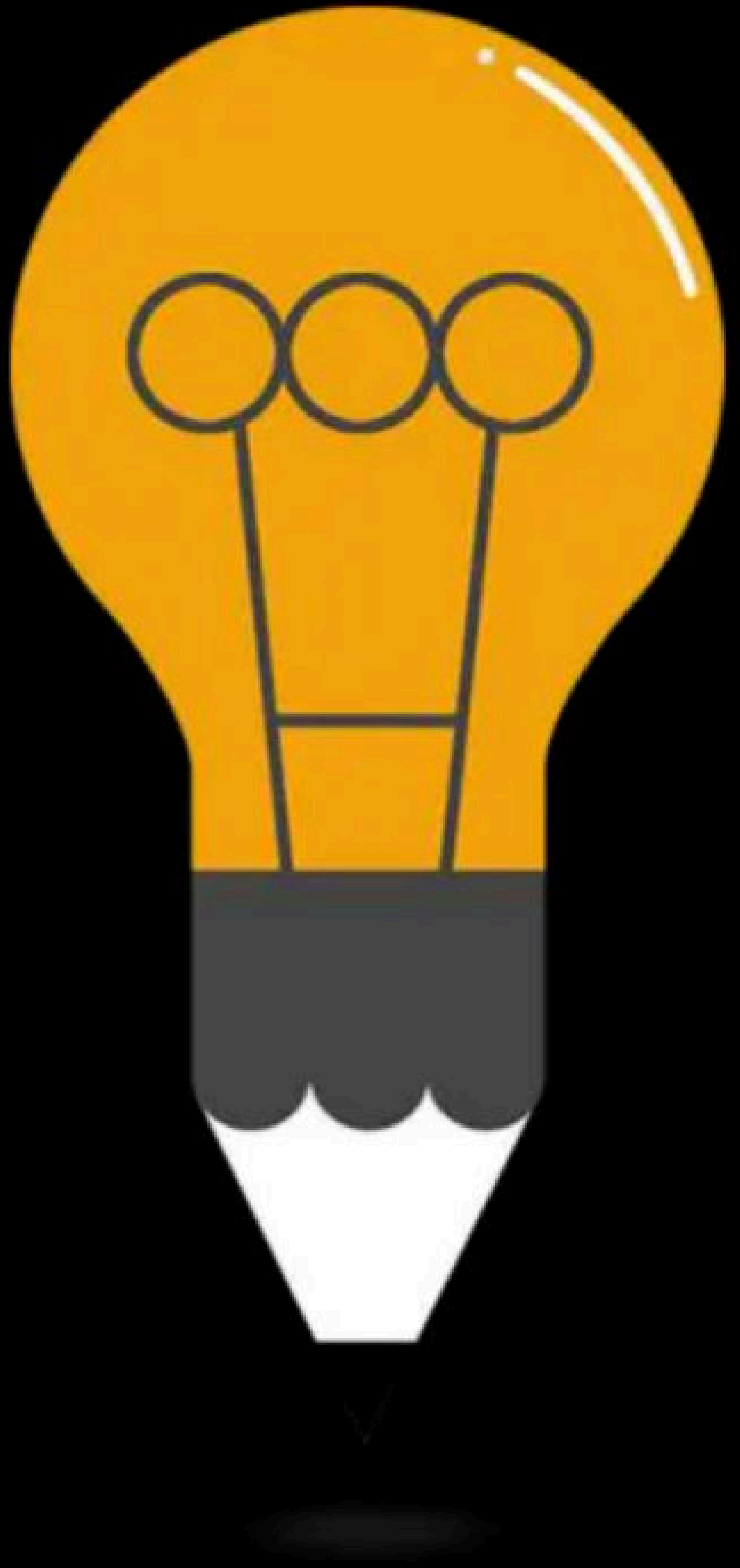
Doubt Clearing Session

Course on C-Programming & Data Structures: GATE - 2024 & 2025

Vishvadeep Gothi • Lesson 4 • Nov 29, 2022



Doubts & C-Language Statements

By: Vishvadeep Gothi

C-tokens

1. Keywords
2. Identifiers
3. Operators
4. Literals (Constants)

Keywords

auto	double	int	struct
break	else	long	switch
case	enum	register	typedef
char	extern	return	union
continue	for	signed	void
do	if	static	while
default	goto	sizeof	volatile
const	float	short	unsigned

Operators

1. Arithmetic
2. Logical
3. Relational
4. Bitwise Operators
5. Assignment Operators
6. Conditional Operator
7. Termination Operator
8. Special Operators

Data Types

Types	**Data Types**
Basic Data Type	int, char, float, double
Derived Data Type	array, pointer, structure, union
Enumeration Data Type	enum
Void Data Type	void

Output Function

Input Function

Header File

Structure of Program in C-language

```
#include <stdio.h>

int main()
{


  return 0;
}
```

standard input output

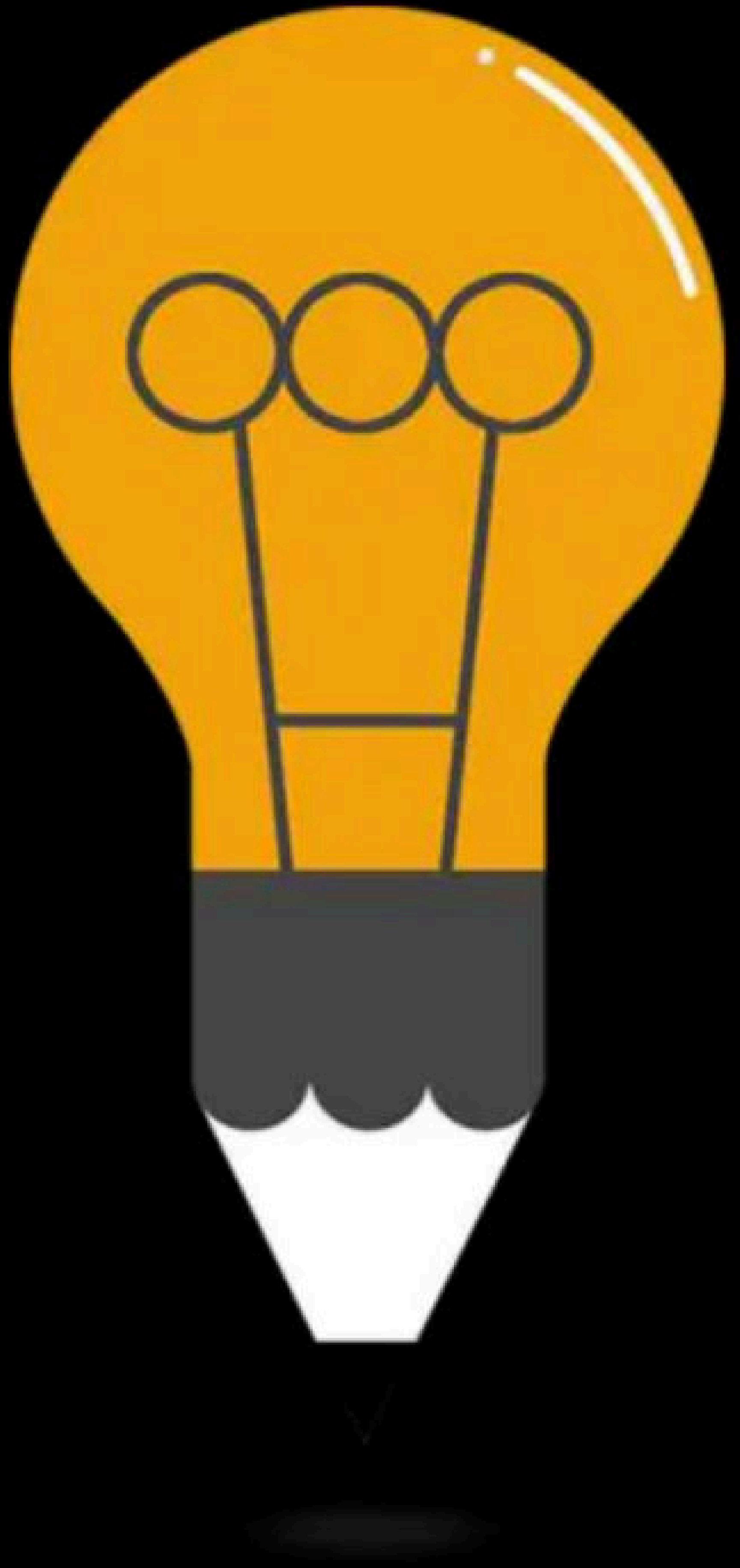
main() function ⇒ library function

⇓

prog. execut^n starts
from main()

Short int x;

int ⇒ 2 B	4 B
short int ⇒ 1 B	2 B



DPP

By: Vishvadeep Gothi

Question

The tool used by a programmer to convert a high-level source program to an object module is a

[✓ A. Complier]

B. Language translator

C. Linker

D. Preprocessor

in programming language

CPU understands

Question

Which of the following C types could be more suitable to store pi(3.14159)?

A. Short int

[✓ B. double]

C. long int

D. double imaginary

Question

Which of the following output formatting statements would print the following results?

23 z 4.100000

A. printf("%d%c%f", 23, z, 4.1);

B. printf("%i%c%f", 23, z, 4.1);

[✓ C.] printf("%d %c %f", 23, z, 4.1);

D. printf("%i%z%f", 23, z, 4.1);

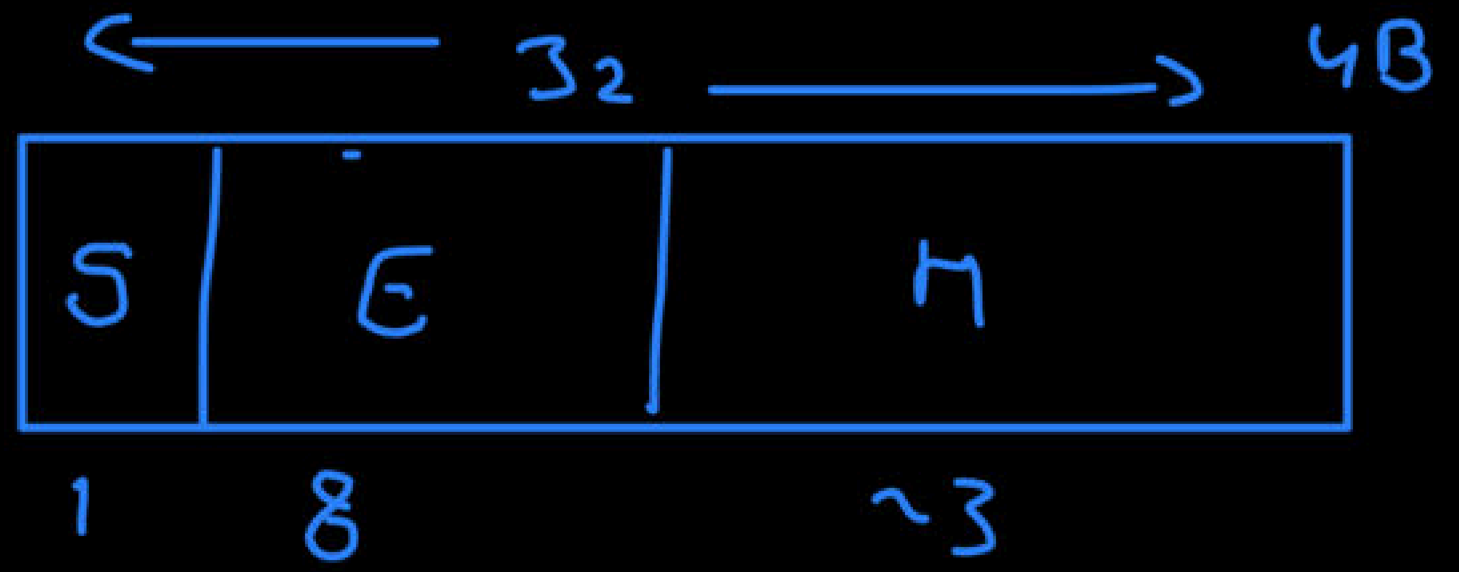
```
float x = 4.1;

printf("%f", x);
```

4.100000

6 digits

float => single precision IEEE-754



Question

Given the following code, what is the value of x after the print statement?

$x = \cancel{5}\ \cancel{6}\ 7$

```
int x;
x = 4;
printf(“%d", --x);
```

3

✓ $\boxed{x + 1}$ ⇒ postfix

$+ + \underline{x}$ ⇒ prefix

A. 2

[✓ B. 3]

C. 4

D. 5

Question

Which of the following is not a valid assignment expression?

a) a = b

b) a *= b

[✓ c)] a + b = c

d) a = b = 0

if LHS of = expressions not allowed

Question

Which of the following expressions uses associativity?

A. a * b + c

✓ B. a * b/c

C. a + b % c

D. a - b * c

Question

Which of the following is not a logical operator?

[✓ A. if]

B. not

C. and

D. or

Question

Which of the following is the complement of equal (= =)?

A. >

B. >=

C. <=

[✓ D. !=]

Question

Which of the following is not a relational operator?

[✓ A. =] → assignment

B. <

C. >=

D. >

Question

The _________ operator is used to extract the address for a variable.

[✓ A. address (&)]

B. assignment (=)

C. indirection (*)

D. selection (>)

Ternary operator

a = ~~5~~ 3
b = 3
c = 2

```
d = (6 == 6) ? (a = b) : (b = c)
```

d = 3

```
printf("%d", b = c);
```

2

a = 5
b = ~~3~~ 2
c = 2

Printf() Variants

```
printf("%d", printf("program"));
```

```
program7
```

after printing it will return no. of characters printed.

```
int x = -5;
printf("%u", x);
```

1. 2's complment
2. ⇒ little endian
3. Big endian

sizeof

sizeof (input) ⇒ returns size of input in bytes

sizeof (int) => 2 bytes

```
int x ;
sizeof (x)  =>  2 bytes
```

```
int x =5 , y = 10;
sizeof (x + y);    2 bytes
```

int Division

```
int x, y, z;

x = 5;
y = 2;
z = x/y;
printf("%d", z); 2

printf("%f", x/y); 0
```

Type casting:-

changing type

```
printf("%f", (float)(x/y));
2.000000

print("%f", (float) x/y);
2.500000
```

Char constants & ASCII

char ch = 'A';

'A' stored as $(01000001)_2 = (65)_{10}$

'B' —— " —— $(01000010)_2 = (66)_{10}$

'C' $(67)_{10}$

⋮

'a' —— " —— = $(97)_{10}$

'b' —— " —— = $(98)_{10}$

ASCII ↓ American standard code for Information Interchange

⇓

every char has an equivalent binary combination of 8 bits (1 bytes)

```
int x = 'A';
printf("%d", x);          65
```

```
char ch = 99;
printf("%c", ch);          c
```

NULL character ⇒ '\0' back-slash zero

ASCII ⇒ 0 zero

Branching Statements

will break sequential execut^n of program

1. if
2. if else
3. Loops
   - while
   - do while
   - for
4. switch case
5. goto

① if

synt :-

```
if (condition )
{


}
```

```
int a = 5, b = 3

if ( a > b ]
{
printf(" a is greater \n");
}
printf (" Good bye");
```

a = 5
b = 3

a is greater
Good bye

for a = 3
b = 5

Good bye

② if else

Syntax :-

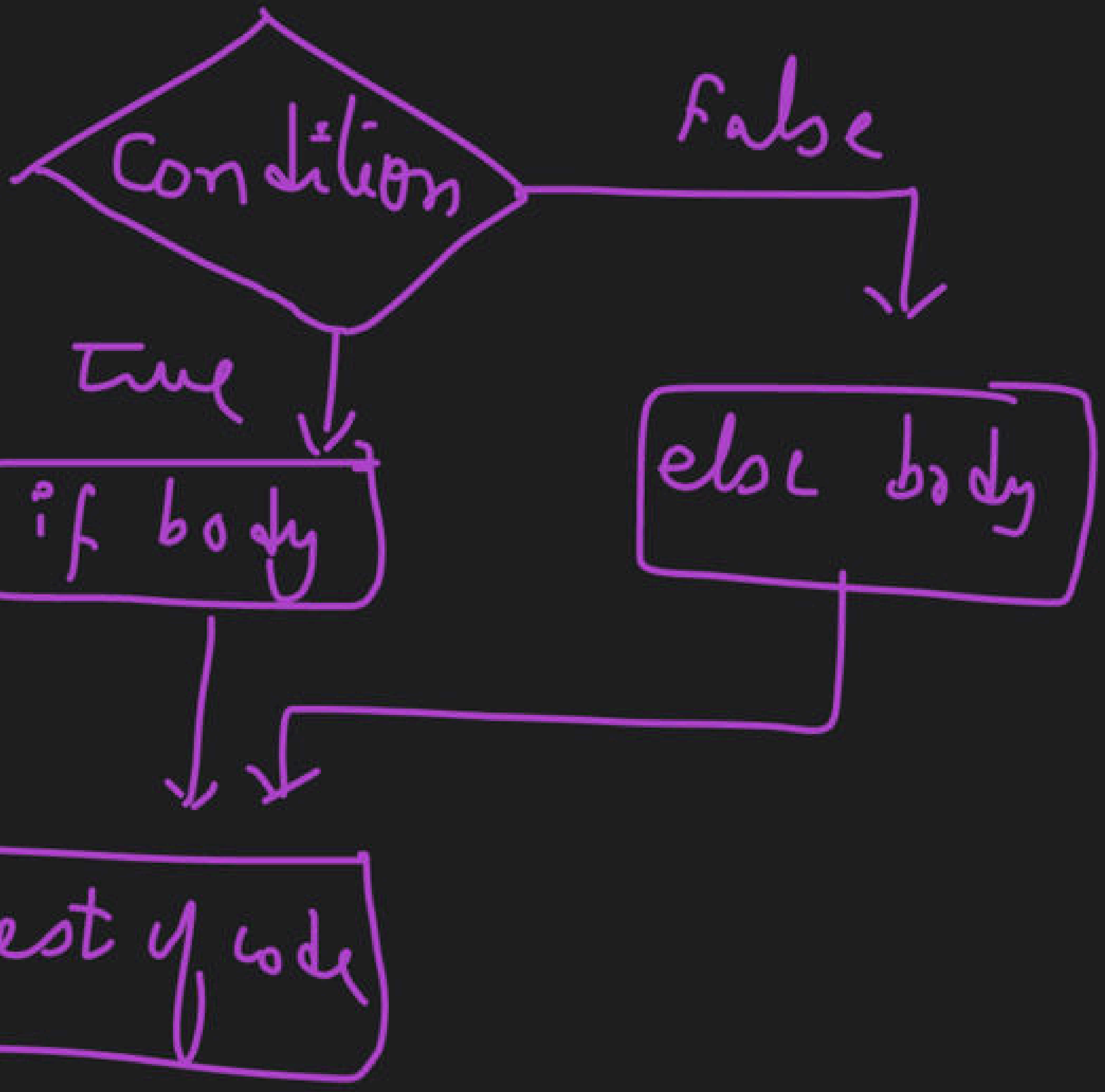
```
if (condition)
{



}
else
{



}
```



eg:-

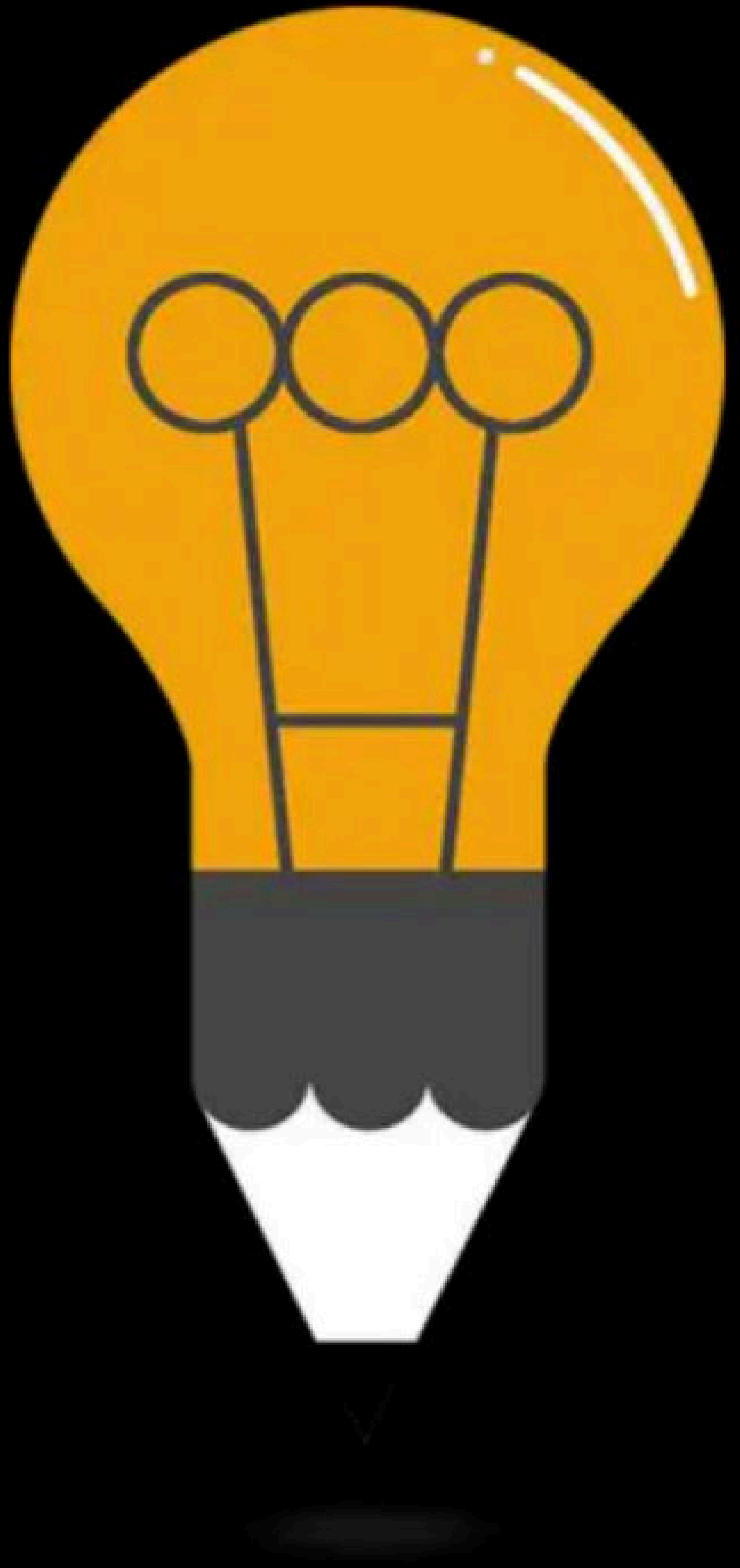
```
int x;
scanf("%d", &x);
if (x%2==0)
{
 printf("x is even");
}
else
{
 printf("x is odd");
}
```

x = 5

x is odd

x = 6

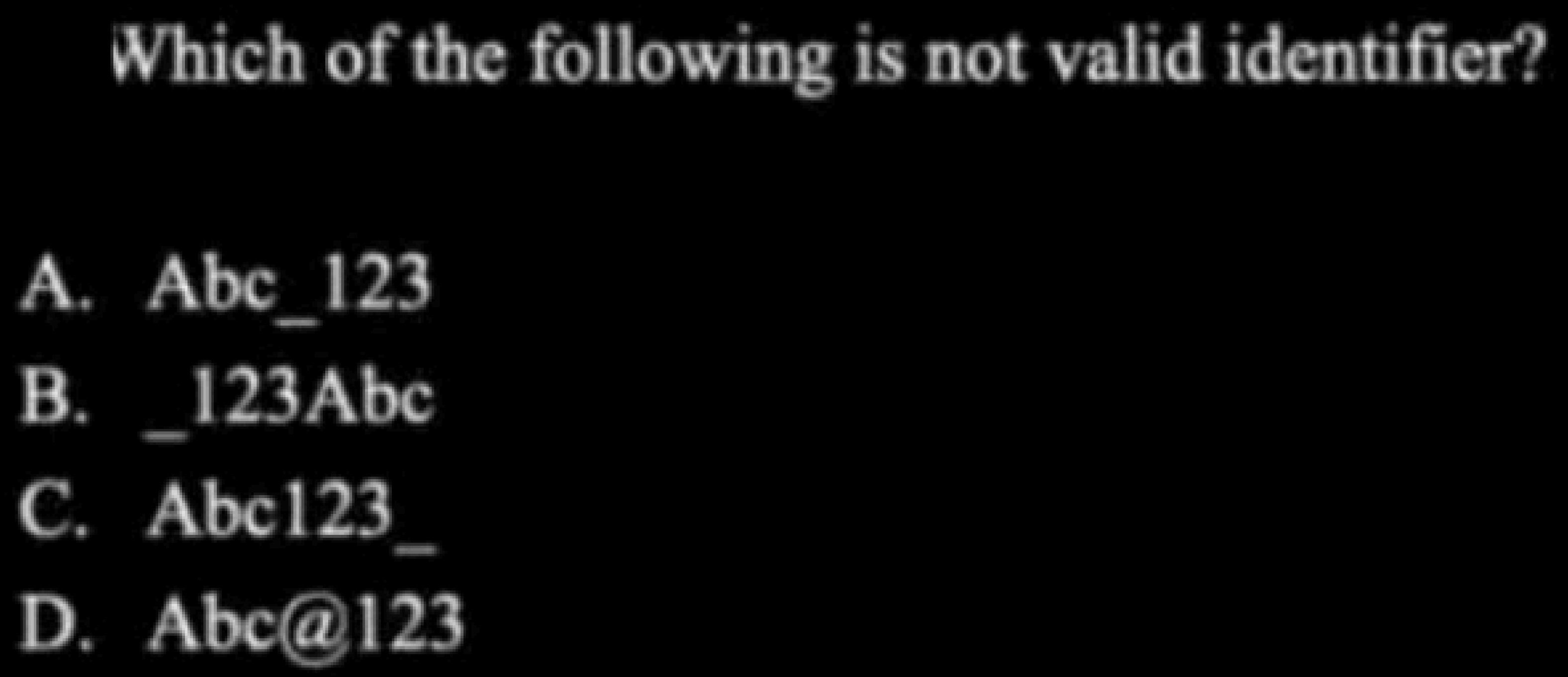
x is even



DPP 2

By: Vishvadeep Gothi

Question



Which of the following is not valid identifier?

A. Abc_123
B. _123Abc
C. Abc123_
D. Abc@123

Question

Which of the following is valid identifier?

A. Abc

B. !$Abc

C. Abc^123

D. Abc 123

Question

Which of the following is valid identifier?

A. 123 Abc
B. int
C. goto
D. ab_

Question

Which of the following is not unary operator?

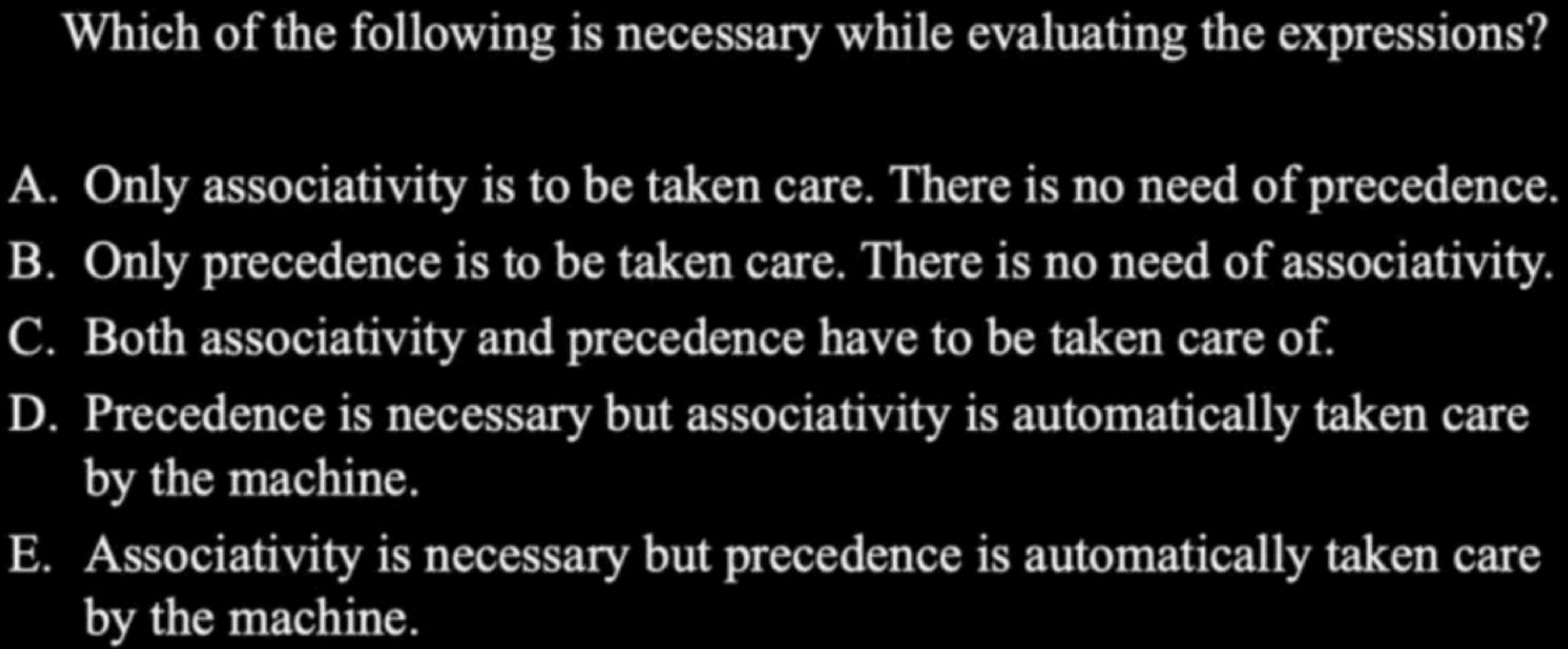
A. ++

B. -

C. sizeof

D. ?:

Question



Which of the following is necessary while evaluating the expressions?

A. Only associativity is to be taken care. There is no need of precedence.

B. Only precedence is to be taken care. There is no need of associativity.

C. Both associativity and precedence have to be taken care of.

D. Precedence is necessary but associativity is automatically taken care by the machine.

E. Associativity is necessary but precedence is automatically taken care by the machine.

Question

Predict the output of the following program:

```
#include <stdio.h>
int main()
{
  printf("%lu %lu %lu %lu", sizeof(char), sizeof(int), sizeof(float), sizeof(double));
  getch();
  return 0;
}
```

a) 1 4 4 8

b) 1 2 4 8

c) 1 2 4 16

d) 1 4 8 16

e) Machine dependent

Question

Predict the output of the following program:

```
#include <stdio.h>
void main(){
        short z=‘a';
        z+=2;
        z++;
        printf("%c,%d", z,z);
        getch();
}
```

a) d,100

b) a,97

c) c,99

d) Compilation Error

e) Runtime Error

Question

Predict the output for the following program:

```
#include <stdio.h>
int main(){
  int s = 0;
  int t= (~s == 1);
  s=~s;
  printf("%d,%d",s, t);
  return 0;
}
```

a) 1,0

b) 0,0

c) -1,0

d) 255,0

e) Compiler Dependent

Question

Predict the following program’s output:

```
void main(){
        int x=10,y=20,z=30;
        x=x+y-z;
        z=z<<1;
        x=(x==0)?(x=y<<1&0):z;
        y=10--;
        printf("%d,%d,%d",x,y,z);
}
```

a) 0,10,60

b) 1,10,60

c) 1,9,60

d) 0,9,60

e) Compilation Error

Question

Predict the output of the following program:

```
int main()
{
    int x=2,y=3,z;
    z=(x&y)?10:20;
    z=z&(z-1);
    printf("%d",z);
    return 0;
}
```

a) 10

b) 20

c) 8

d) 2

e) 3

Question

Find the output of the following program.

```
#include<stdio.h>
int main()
{
    printf(“%d”,printf(“GATE EXAM”));
    getch();
    return 0;
}
```

a) Compilation Error

b) 9GATE EXAM

c) GATE EXAM1

d) 1GATE EXAM

e) GATE EXAM9

Question

Find the output of the following program.

```
#include<stdio.h>
int main()
{
    printf(“%d”,printf(“%d”,printf(“GATE EXAM”)));
    getch();
    return 0;
}
```

a) Compilation Error

b) GATE EXAM91

c) GATE EXAM910

d) 19GATE EXAM

e) 109GATE EXAM

Question

Predict the output of the following program:

```
int main()
{
   int x,y,z;
   x=y=z=10<<1;
   y=y>>1^3;
   z=10-3*2*2+20<<1 && 8-6/3*2;
   printf("%d,%d,%d",x, y, !z);
}
```

a) 20,9,1

b) 20,1000,0

c) 20,9,0

d) 20,1000,1

e) Compiler error

Happy Learning.!