Data Types and Variables

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Questions

Why do we need high level language?

1. Machine level language is difficult.
2. Machine level language is error prone.
3. Machine level language is not portable.
4. All of these.
5. None of these.

Questions

From where does the execution of program start?

1. printf function.
2. stdio.h file.
3. from #include.

Questions

Which function is used to print statements?

1. main
2. stdio.h
3. #include
4. // statement to print
5. printf

Questions

Which component is responsible for removing comments from source file?

1. Preprocessor
2. Compiler
3. Assembler
4. Linker

Questions

Which component is responsible for converting IR to object code?

1. Preprocessor
2. Compiler
3. Assembler
4. Linker

Questions

Which component is responsible for generating executable code?

1. Preprocessor
2. Compiler
3. Assembler
4. Linker

Review

Write a program to print the following:

First Name: Your First Name

Last Name: Your Last Name

University: CSVTU

Example:

First Name: Nachiket

Last Name: Tapas

University: CSVTU

Code

```
// Program to print the bio data
// Date - 29/12/2021
// Created by - Nachiket Tapas

#include<stdio.h>

void main() {

        printf(“First Name: Nachiket”)

        printf(“Last Name: Tapas”);

        printf(“University: CSVTU”);

}
```

Output

First Name: NachiketLast Name: TapasUniversity: CSVTU

Escape Sequence \n

- Special character.
- Used to print something in new line.

Code

```
// Program to print the bio data
// Date - 29/12/2021
// Created by - Nachiket Tapas

#include<stdio.h>

void main() {

        printf(“First Name: Nachiket \n”);

        printf(“Last Name: Tapas \n”);

        printf(“University: CSVTU \n”);

}
```

Output

First Name: Nachiket

Last Name: Tapas

University: CSVTU

Review

Program to add two integers 20 and 50.

Code

```
// Program to add two integers
// Date - 29/12/2021
// Created by - Nachiket Tapas
#include<stdio.h>
void main() {
	int no1 = 10;
	int no2 = 20;
	int sum = 0;
	sum = no1 + no2;
	printf(“%d”, sum);
}
```

Output: 30

Review

Program to add three floating point numbers 10.5, 11.5, and 12.5.

Code

```
// Program to add three floats
// Date - 29/12/2021
// Created by - Nachiket Tapas
#include<stdio.h>
void main() {
	float no1 = 10.5;
	float no2 = 20.5;
	float no3 = 30.5;
	float sum = 0;
	sum = no1 + no2 + no3;
	printf(“%f”, sum);
}
```

Output: 61.5

Recap

Y = f(x) = 10*x + 15

x = 5

Y = ?

Y = printf(x);

x = “hello”

Y = ?

Recap

Y = f(x) = 10*x + 15

Z = 5*Y

x = 5

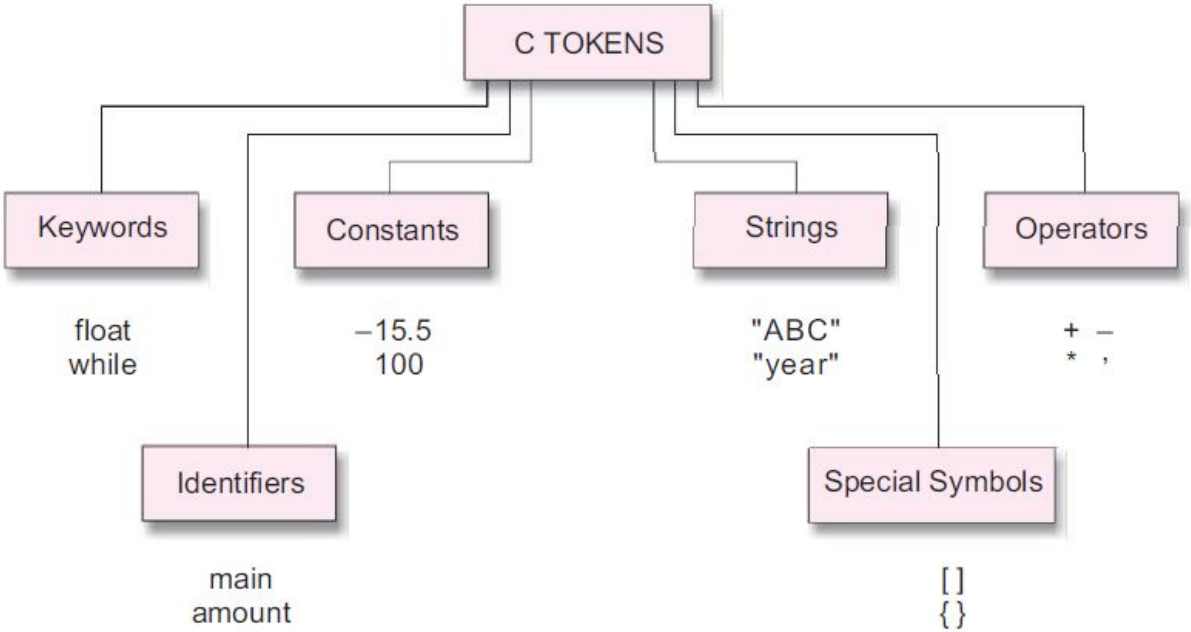
Z = ?

sum = 10 + 20;

Y = printf(“%d”, sum);

Y = ?

C Tokens


C TOKENS
Keywords
float
while
Constants
–15.5
100
Strings
"ABC"
"year"
Operators
+ –
* ,
Identifiers
main
amount
Special Symbols
[ ]
{ }

Data Types

- Set of values
- Set of operations on these values

In Mathematics:

- Natural numbers 1, 2, 3, ….
- +, -, *, /, >, <

Basic Data Types in C

- int
  - bounded integer
  - ex: -5 or 762
- float
  - real numbers
  - ex: 3.14 or 2.0
- double
  - real numbers with more precision
  -
- char
  - single character

- %d
- %f
- %lf
- %c

Characters

- Characters are written in ‘’ (single quotes)
- Case sensitive
  - meaning ‘a’ and ‘A’ are not the same.
- Types distinguishes similar looking values
  - meaning 6 and ‘6’ are not the same.
- Special characters
  - ‘\n’, ‘\’’, ‘\”’

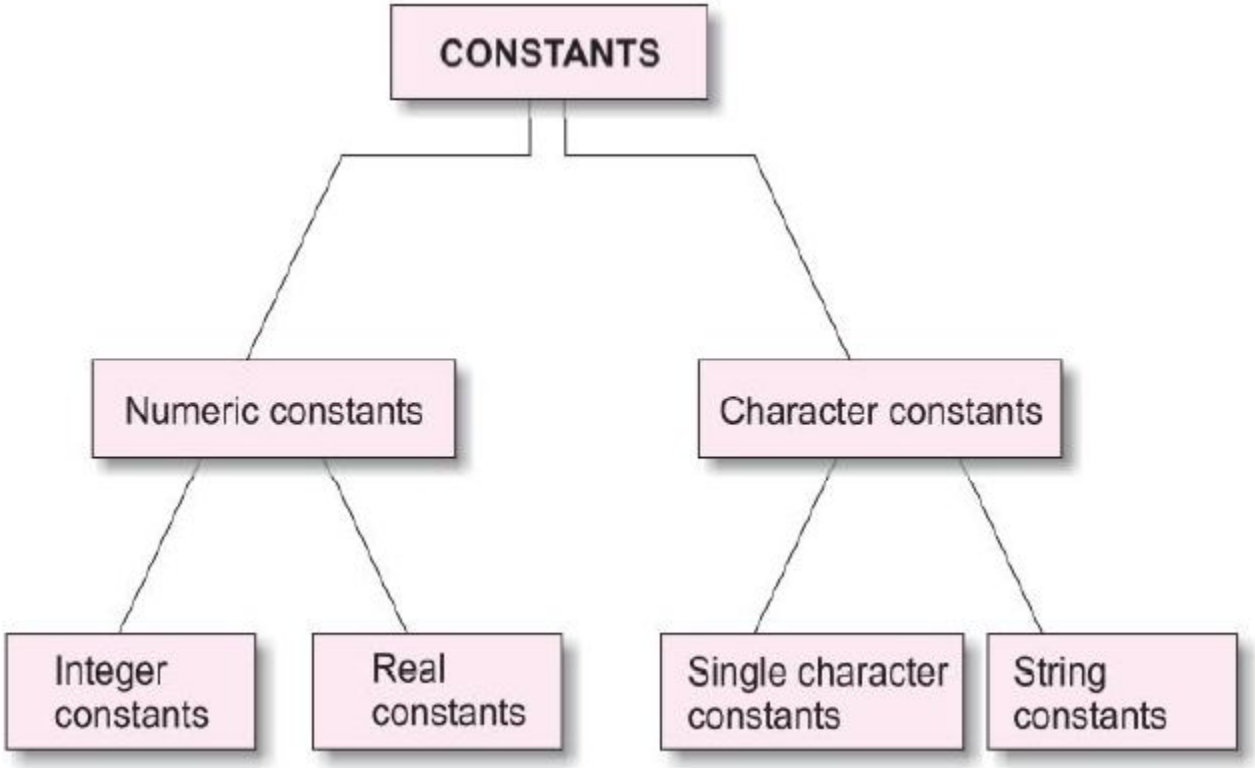
Size of Data Types

char	1 byte
int	2 bytes
float	4 bytes
double	8 bytes

Range

Data type	*Range of values*
char	–128 to 127
int	–32,768 to 32,767
float	3.4e–38 to 3.4e+e38
double	1.7e–308 to 1.7e+308

Constants


CONSTANTS
Numeric constants
Character constants
Integer constants
Real constants
Single character constants
String constants

Constant

Use the keyword const

```
const int a = 5;

const char first = ‘a’;

const float pi = 3.14;
```

Assignment 1

All the flowcharts and algorithms done till now. C program for first three.

Q1. Add 10 and 20

Q2. Find the sum of 5 numbers

Q3. Print Hello World 10 times

Q4. Draw a flowchart to log in to facebook account

Thank You!!