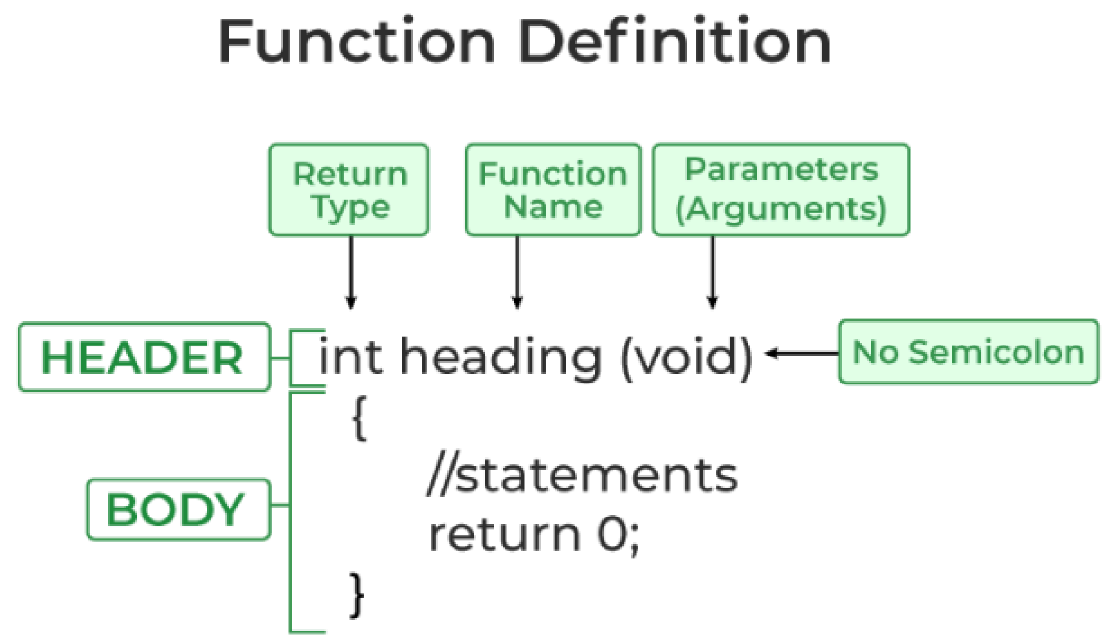
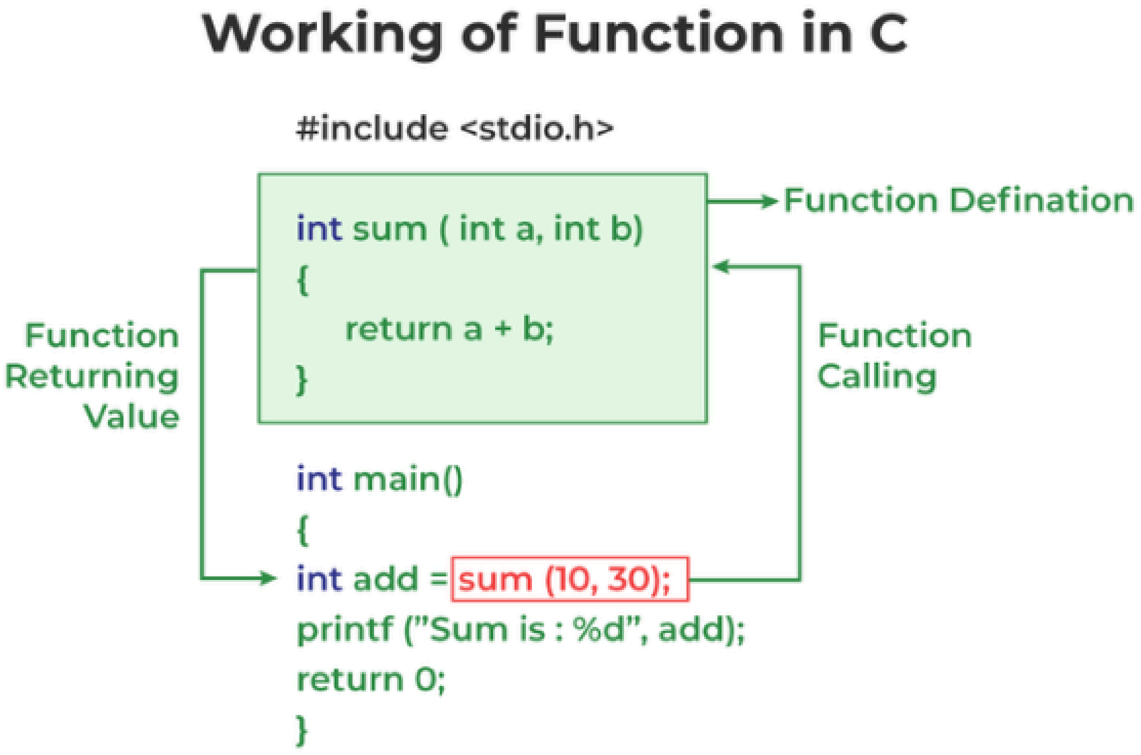
Function:



Function Definition

```
int heading (void)
  {
       //statements
       return 0;
  }
```



Working of Function in C

```
#include <stdio.h>

int sum ( int a, int b)
{
    return a + b;
}

int main()
{
int add = sum (10, 30);
printf (”Sum is : %d”, add);
return 0;
}
```

```c
// C program to show
// user-defined functions
#include <stdio.h>

int sum(int a, int b)
{
  return a + b;
}

// Driver code
int main()
{
  int a = 30, b = 40;

  // function call
  int res = sum(a, b);

  printf("Sum is: %d", res);
  return 0;
}
```

Exercise questions:

Question:
Write a C program that prompts the user to enter the radius of a circle. The program should then calculate and display various properties of the circle such as its diameter, circumference, and area. After displaying the properties, the program should prompt the user if they want to continue. If the user enters a negative value for the radius, the program should exit.

Expected output:

```
Enter the radius of the circle (or enter a negative value to exit): 5
Diameter of the circle: 10.00
Circumference of the circle: 31.42
Area of the circle: 78.54

Enter the radius of the circle (or enter a negative value to exit): 2.5
Diameter of the circle: 5.00
Circumference of the circle: 15.71
Area of the circle: 19.63

Enter the radius of the circle (or enter a negative value to exit): -1
Exiting the program.
```

```
#include <stdio.h>
#include <stdlib.h>

#define PI 3.14159

// Function to calculate diameter
calculateDiameter() {
    // Fill this function to calculate the diameter
}

// Function to calculate circumference
calculateCircumference() {
    // Fill this function to calculate the circumference
}

// Function to calculate area
calculateArea() {
    // Fill this function to calculate the area
}

int main() {
    double radius;
// declare while loop for continuous input
     {
        // Prompt user to enter radius
        printf("\nEnter the radius of the circle (or enter a negative value to exit): ");
        scanf("%lf", &radius);

        // Check if the user wants to exit


        // Check if radius is non-negative



        // Calculate diameter, circumference, and area


        // Display results

    }

    return 0;
}
```

Problem:

We want to write calculations using functions and get the results. Let's have a look at some examples:

```
seven(times(five())); // must return 35
four(plus(nine())); // must return 13
eight(minus(three())); // must return 5
six(dividedBy(two())); // must return 3
```

Requirements:

There must be a function for each number from 0 ("zero") to 9 ("nine")

There must be a function for each of the following mathematical operations: plus, minus, times, dividedBy

Each calculation consist of exactly one operation and two numbers

The most outer function represents the left operand, the most inner function represents the right operand

Division should be integer division. For example, this should return 2, not 2.666666...:

Expected Output:

```
35
13
5
3
```

Problem Analysis:

seven(times(five())): This translates to 7 * 5 = 35.

four(plus(nine())): This translates to 4 + 9 = 13.

eight(minus(three())): This translates to 8 - 3 = 5.

six(dividedBy(two())): This translates to 6 / 2 = 3.