C Programming: Function

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Lecture Outline

- Introduction to Function
  - What is function?
  - Advantage of using Function?
- Function key concepts:
  - Function declaration, Function definition, Function call
  - Return type: void vs int, char, float
  - actual argument vs formal argument.
  - Scope of variable.
  - library function:
    - stdio.h - printf, scanf
    - math.h - pow, sin, cos, tan

Lecture Outline

- Function Examples
  - Calculate Simple Interest.
  - Sum of digits, Check Prime, Check even/odd.
  - Sum of prime.
  - Sum of series.
- Function Advanced:
  - Recursion
    - Factorial, Fibonacci, GCD.
  - Function with variable number of inputs.

GOALS

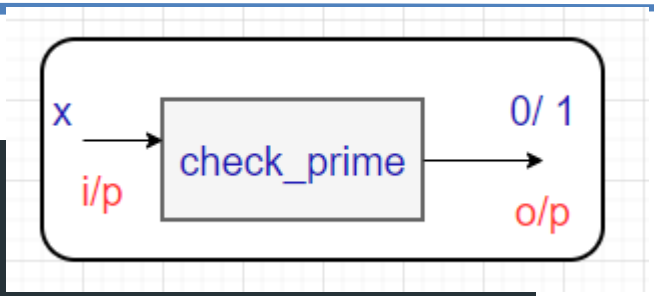
- Get basic understanding of Function
- Be able to
  - Create a function and use it.
  - Understand the parameter passing between function.
  - Recursive function.

Function

- A coherent lines of code to do a well-defined task.
  - check_prime: A function to check whether a number is prime or not.
  - product: A function to multiply two number.
  - print_star_format: A function to print star like below

```
*
* *
* * *
```

Function : C syntax



C1 > C_Basics > Functions > first_function.c > ...

```c
#include<stdio.h>

// Function declaration or Function prototype
int check_even(int x);

// Main Function : First function to be executed
int main()
{   int x=10, y;
    y= check_even(x); // Function call
    if(y==1)
        printf("%d is Even\n", x);
    else
        printf("%d is Odd\n", x);
}
```

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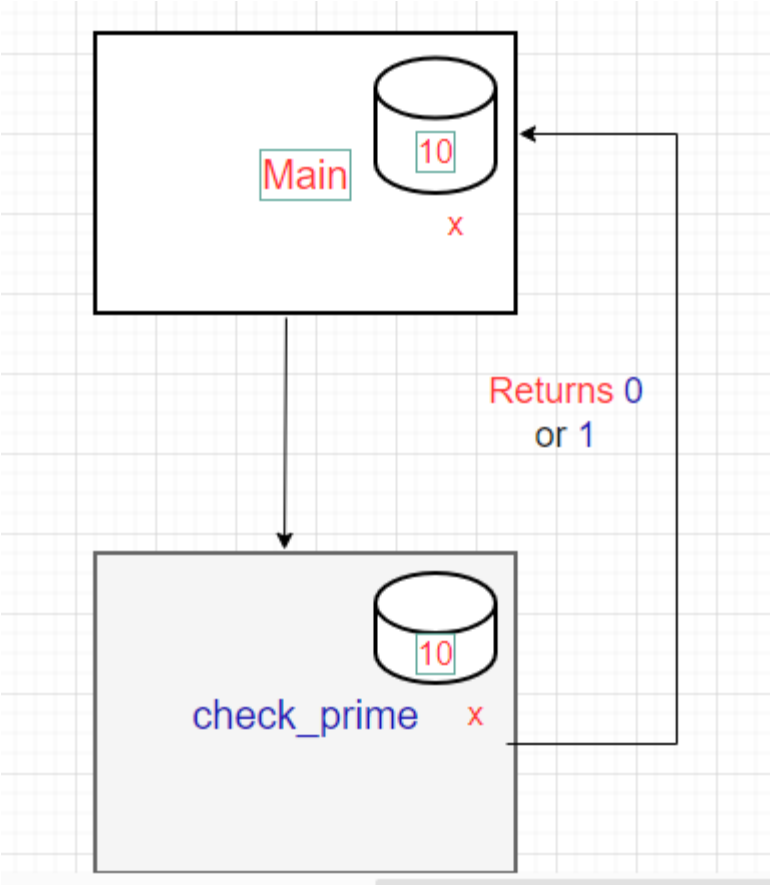
```c
// Function Definition
int check_even(int x)
{
    if(x%2==0)
        return 1;
    else
    {
        return 0;
    }
}
```

```
PS D:\DSA\C1\C_Basics\Functions> gcc first_function.c
PS D:\DSA\C1\C_Basics\Functions> .\a.exe
10 is Even
PS D:\DSA\C1\C_Basics\Functions>
```

Function : C – order of call



Advantage of Function

- Increase code readability.
- Easy to debug and fix errors.
- Code become Modular.
- Easy to re-use.

Return type of function

void vs int, char, float, int *

Actual vs Formal Arguments

Practice Function Code

- Write a program to check a prime number.
- WAP to find sum of all primes within a given range.
- WAP to find simple interest given p, r, and t.
- WAP to find factorial of a number using iteration.
- WAP to find sum of series

1+ x + x^2 / 2! + x^3/3! + … + x^n/ n!

Questions?


THANK
YOU