Tutorial 9: Programming in C

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Example 1: Hello World!

```c
#include <stdio.h>

int main()
{
    printf("Hello World\n");

    return 0;
}
```

Example 2: Reading input

```c
#include <stdio.h>

int main()
{
    int x;

    printf("Input an integer:\n");
    scanf("%d", &x);

    printf("The integer is: %d\n", x);

    return 0;
}
```

Example 3: If/Else

```c
#include <stdio.h>

int main()
{
    const int x = 1;

    if (x == 1)
        printf("x is equal to one.\n");
    else
        printf("For comparison use '==' as '=' is the
        assignment operator.\n");

    return 0;
}
```

Example 4: While

```c
#include <stdio.h>

int main()
{
    int c = 1;

    while (c <= 10)
    {
        printf("%d ", c);
        c++;
    }

    return 0;
}
```

Example 5: Prime numbers

```c
#include <stdio.h>

int main()
{
    int n, c;

    printf("Enter a number\n");
    scanf("%d", &n);

    if (n == 2)
        printf("Prime number.\n");
    else
    {
        for (c = 2; c <= n - 1; c++)
        {
            if (n % c == 0)
                break;
        }

        if (c != n)
            printf("Not prime.\n");
        else
            printf("Prime number.\n");
    }

    return 0;
}
```

Example 6: Command-line arguments

```c
#include <stdio.h>

int main(int argc, char *argv[])
{
    int c;

    printf("Number of command line arguments passed: %d\n",
    argc);

    for (c = 0; c < argc; c++)
        printf("%d argument is %s\n", c + 1, argv[c]);

    return 0;
}
```

Example 7: Arrays

```c
#include <stdio.h>

int main()
{
    int array[100], n, c;

    printf("Enter number of elements in array\n");
    scanf("%d", &n);

    printf("Enter %d elements\n", n);

    for (c = 0; c < n; c++)
        scanf("%d", &array[c]);

    printf("The array elements are:\n");

    for (c = 0; c < n; c++)
        printf("%d\n", array[c]);

    return 0;
}
```

Example 8: Functions

```c
#include <stdio.h>

void my_function();

int main()
{
    printf("Main function.\n");

    my_function();

    printf("Back in function main.\n");


    return 0;
}

void my_function()
{
    printf("my_function called.\n");
}
```

Example 9: Comments

```c
#include <stdio.h>

int main()
{
    // Single line comment

    printf("Writing comments is very useful.\n");

    /*
    * Multi-line comment syntax
    * Comments help us to understand program later easily.
    * Will you write comments while writing programs?
    */

    printf("Good luck C programmer.\n");

    return 0;
}
```

Example 10: Structures

```c
#include <stdio.h>
#include <string.h>

struct game
{
    char game_name[50];
    int number_of_players;
};

int main()
{
    struct game g;

    strcpy(g.game_name, "Cricket");
    g.number_of_players = 11;

    printf("Name of game: %s\n", g.game_name);
    printf("Number of players: %d\n", g.number_of_players);

    return 0;
}
```

Example 11: Fibonacci series

```c
#include <stdio.h>

int main()
{
    int n, first = 0, second = 1, next, c;

    printf("Enter the number of terms\n");
    scanf("%d", &n);

    printf("First %d terms of Fibonacci series are:\n", n);

    for (c = 0; c < n; c++)
    {
        if (c <= 1)
            next = c;
        else
        {
            next = first + second;
            first = second;
            second = next;
        }

        printf("%d\n", next);
    }

    return 0;
}
```

References:

https://www.programmingsimplified.com/c-program-examples