```
# C Tutorial For Beginners

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##Installing CDT In Eclipse
https://www3.ntu.edu.sg/home/ehchua/programming/howto/EclipseCpp_HowTo.html

##Online Editors
 - http://www.tutorialspoint.com/compile_c_online.php
 - https://www.google.co.in/search?q=c+online+compiler

#All Code Examples
#Hello World
```
#include <stdio.h>

int main() //pre-defined function
{
        printf("Hello World 123");
        return 0;
}
```

#Main is Main
```
#include <stdio.h>

int printSomething()
{
        printf("I will not be executed");
        return 0;
}

int main()
{
```
```

```
        printf("I'm a great guy");
        return 0;
}
```
#Print Something
```
#include <stdio.h>

void printSomething()
{
        printf("I will not be executed");
}

int main()
{
        printf("I'm a great guy");
        printSomething();
        return 0;
}

```
#First Variable
```
#include <stdio.h>

//Variable - value can change
//Assignment Operator

////////
//  3  //
////////
//score - integer
int main()
{
        int score;//1854054454
        //TYPE NAME;
        //d - integer
        printf("score : %d",score);
        return 0;
}

```
#Two Variables
```
#include <stdio.h>

//Assignment Operator

//////////////
//  20  //
//////////////
//score - integer
int main()
{
        int score1;//
        int score2;

        score1 = 5;
        score2 = 15;

        printf("score1 : %d \n",score1);

        printf("score2 : %d",score2);
        return 0;
}
```

```

#Sum of Two Variables
```
#include <stdio.h>

//Assignment Operator

/////////////////
// 20 //
/////////////////
//score - integer
int main()
{
        int score1;//
        int score2;
        int sum;

        score1 = 5;
        score2 = 15;

        sum = score1 + score2;

        printf("score1:%d score2:%d sum:%d",
                        score1,score2,sum);
        return 0;
}
```

#Swap Program
```
#include <stdio.h>

//Assignment Operator

//////////   //////////
//   10   //   // 10   //
//////////   //////////
// i   j

//score - integer
int main()
{
        int i=5;
        int j=10;
        int k;

        k = i;//k=5,i=5,j=10
        i=j;//k=5,i=10,j=10
        j=k;//k=5,i=10,j=5

        printf("i:%d j:%d",
                        i,j);

        return 0;
}
```
#Floating point variable
```
#include <stdio.h>

int main()
{
        int i=1;
        int j=10;
```
```

```
        float avg;//1.5,2.5

        avg = (i+j)/2.0;

        printf("avg:%f",avg);
        //d - integer
        //f - float

}
```
#Character Example
```
#include <stdio.h>

int main()
{
        int i=1;
        int j=10;

        char ch = 67;//ASCII

        printf("ch:%c",ch);//A
        //d - integer
        //f - float
        //c - character

}
```

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

//REturnType NameofFuntion()
//{
// BODY;
//}
void welcome() //declaration
{
        printf("Hi From in28Minutes.com\n");
}

int main()
{
        welcome(); //calling or invocation
        welcome();
        welcome();
}
```
#IF ELSE
```
#include <stdio.h>

void welcome()
{
        printf("Welcome to in28minutes.com\n");
}

void subscribe() //declaration
{
        printf("Subscribe at in28Minutes.com\n");
}

int main()
```

```
{
        int like=0;
        welcome(); //calling or invocation

        if(like) // true if like has non zero
        {
                subscribe();
        }
        else
        {
                printf("Please tell us what we can do to improve");
        }
}
```

#Nested If Else

```
#include <stdio.h>

int main()
{
        int score=3;
        //1 - Single 2- Double
        //3 - Triple 4 - Boundary 6 - Sixer

        if(score==1)
        {
                printf("Single");
        }
        else if(score==2)
        {
                printf("Double");
        }
        else
        {
                printf("Something Else");
        }
}
```

#Switch Statement

```
#include <stdio.h>

int main()
{
        int score=6;
        //1 - Single 2- Double
        //3 - Triple 4 - Boundary 6 - Sixer

        switch(score)
        {
        case 1 :
                printf("Single");
                break;
        case 2 :
                printf("Double");
                break;
        default:
                printf("Something Else");
                break;
        case 4:
                printf("Boundary");
                break;
        }
}
```

```
#Need for an Array
```
```
#include <stdio.h>

int main()
{
        int score1=6;
        int score2=15;
        int score3=145;
        int count = 0;

        if(score1>99)
                count = count + 1;

        if(score2>99)
                count = count + 1;

        if(score3>99)
                count = count + 1;

        printf("Number of Centuries %d",count);
}
```
```
#Array Basics
```
```
#include <stdio.h>
int main()
{
        int score1=106;
        int score2=15;
        int score3=145;
        int score4=23;

        int scores[10] = {106, 15, 145, 23};
                                // 0    1   2   3
        int scoresLength = 4;

        //How to read values?
        //printf("%d",scores[0]);
        //How to set values?
        scores[0] = 108;
        //How to find length of an array?
        //What is the default value?
        //printf("%d",scores[5]);//0
        //What if I try to bite more than I can Chew?
        printf("%d",scores[11]);//-1308602447

}
```
```
#For Loop Example
```
```
#include <stdio.h>
int main()
{

        int scores[] = {106, 15, 145, 23};
                                // 0    1   2   3
        int scoresLength = 4;

        for
        (
                        int i = 0;//initialization
                        i < scoresLength;//condition
                        i++//increment
```

```
        )
        {
                printf(" %d ",scores[i]);
        }

}
```

```
#While Loop Example
```

```
#include <stdio.h>
int main()
{

        int scores[] = {106, 15, 145, 23, 235,235,235};
                                // 0    1   2   3
        int scoresLength = 7;

        int i = 0;//initialization

        while(i < scoresLength)//condition
        {//i:7
                printf(" %d ",scores[i]);
                i++;//increment
        }

        for(int i=0;i<scoresLength;i++)
        {
                printf(" %d ",scores[i]);
        }
}
```

```
#Do while Example
```

```
#include <stdio.h>
int main()
{

        int scores[] = {106, 15, 145, 23, 235,235,235};
                                // 0    1   2   3
        int scoresLength = 7;

        int i = 0;//initialization

        do
        {//i:7
                printf(" %d ",scores[i]);
                i++;//increment
        }
        while(i < scoresLength);//condition
}
```

```
#C Program : Print an Array
```

```
#include <stdio.h>

//returntype name(arguments)
void printArray(int array[],int length)
{
        for(int i=0;i<length;i++)
        {
                printf("%d ",array[i]);
        }
```

```
        printf("\n");
}

int main()
{
        int scoresTeam1[] = {10,101,25,47};
        int scoresLength = 4;
        int scoresTeam2[] = {10,100,5,7};

        printArray(scoresTeam1,scoresLength);
        printArray(scoresTeam2,scoresLength);
        return 0;
}
```

#Program - is number even?
```
#include <stdio.h>

//0 - false, anything non-zero - true (1,-1)
int isEven(int number)
{
        if(number%2==0)// 5%2==1 - comparision
                return 1;

        return 0;
}

//isEven
//2 - true
//3 - false
int main()
{
        printf("1:%d\n",isEven(1));
        printf("2:%d\n",isEven(2));
        return 0;
}



```
#Leap Year C Program
```
#include <stdio.h>

//0-false 1-true
int isLeapYear(int year)
{
        if(year%400==0)
                return 1;

        if(year%100==0)
                return 0;

        if(year%4==0)
                return 1;

        return 0;
}

//%4 = Leap YEar
//1900,2000,2100,2200,2300,2400

int main()
{
```

```
        printf("2000:%d\n",isLeapYear(2000));
        printf("1900:%d\n",isLeapYear(1900));
        printf("1904:%d\n",isLeapYear(1904));
        printf("1901:%d\n",isLeapYear(1901));

        return 0;
}
```

```
#Sum of first n numbers program
```
```
#include <stdio.h>

//0-false 1-true
int calculateSumUpto(int n)
{
        int result = 0;

        for(int i=1; i<=n; i++)
        {
                result = result + i;
        }

        return result;
        // 1 to n
        // result = result + index
}

// 5 =  1 to 5, 1 + 2 + ... + 5 = 15

int main()
{
        printf("upto 5:%d\n",calculateSumUpto(5));
        printf("upto 10:%d\n",calculateSumUpto(10));

        return 0;
}
```

```
#C Program Sum of First n even numbers
```
```
#include <stdio.h>

//0-false 1-true
int calculateSumEvenNumbersUpto(int n)
{
        int result = 0;

        for(int i=2; i<=n*2; i = i + 2) //1 to n 2,4,6,8,10
        {
                result = result + i; //1 to n  2 * 1 to 2 * n
        }

        return result;
        // 1 to n
        // result = result + index
}

// 5 =  1 to 5, 1 + 2 + ... + 5 = 15

int main()
{
        printf("upto 5:%d\n",calculateSumEvenNumbersUpto(5));
        printf("upto 10:%d\n",calculateSumEvenNumbersUpto(10));
```

```
        return 0;
}
```

#Divisors of a number

```
#include <stdio.h>

void printDivisors(int n)
{
        for(int i=2;i<n;i++){
                if(n%i ==0){
                        printf("%d\n",i);
                }
        }
}

//12 - 2,3,4,6
int main()
{
        printDivisors(12);
        return 0;
}
```

#Prime Number Program

```
#include <stdio.h>

//0-Not prime
//1 - prime
// 12 (2, 3,4,...,11)
int isPrime(int n)
{
        for(int i=2;i<n;i++){
                if(n%i == 0){
                        return 0;
                }
        }

        return 1;
}

//12 - 2,3,4,6
int main()
{
        printf("4 : %d\n",isPrime(4));
        printf("5 : %d\n",isPrime(5));
        return 0;
}
```

#Number of digits in a number

```
#include <stdio.h>

int numberOfDigits(int n) //345
{
        int temp = n;//0
        int count = 0;//3
        while(temp!=0)
        {
                count++;
                temp = temp/10;
        }
```

```
        return count;

}

//456 - 3
//24567 - 5

int main()
{
        printf("456: %d\n",numberOfDigits(456));
        printf("24567: %d\n",numberOfDigits(24567));
        return 0;
}
```

```
#Sum of Digits Program
```

```
#include <stdio.h>

//345
//34 - 5
//3  - 5 + 4
//0  - 5 + 4 + 3

int sumOfDigits(int n) //345
{
        int temp = n;//3
        int sum = 0;//0 + 5 + 4 + 3
        while(temp!=0)
        {
                sum = sum + temp % 10;
                temp = temp/10;
        }
        return sum;

}

//456 - 15
//24567 - 24

int main()
{
        printf("456: %d\n",sumOfDigits(456));
        printf("24567: %d\n",sumOfDigits(24567));
        return 0;
}
```

```
#Write to a file
```

```
#include <stdio.h>

struct Student
{
        char name[100];
        int marks;
        int year;
};

void writeStudentToFile(struct Student student)
{
        //Get a pointer to the opened file
        // w   1 = 1
        // r
        // a - 5 + 1 = 6
```

```
        FILE *fp = fopen("Student.dat","w");

        //Write to the file
        fprintf(fp,"%s %d %d\n",student.name,student.marks,student.year);

        //Close the file
        fclose(fp);
}

int main()
{
        struct Student student =
                {"in28Minutes",100,4};

        writeStudentToFile(student);
}
```

```
#Read From File
```

```
#include <stdio.h>

struct Student
{
        char name[100];
        int marks;
        int year;
};

struct Student readStudentFromFile()
{
        //Get a pointer to the opened file
        FILE *fp = fopen("Student.dat","r");
        struct Student student;

        //Read from the file
        fscanf(fp,"%s %d %d\n",student.name,&student.marks,&student.year);

        //Close the file
        fclose(fp);

        return student;
}

void printStudent(struct Student student)
{
        printf("%s %d %d\n",student.name,student.marks,student.year);
}

int main()
{
        struct Student student = readStudentFromFile();
        printStudent(student);
}
```

```

##About in28Minutes
- At in28Minutes, we ask ourselves one question everyday. How do we create more effective trainings?
- We use Problem-Solution based Step-By-Step Hands-on Approach With Practical, Real World Application Examples.
- Our success on Udemy and Youtube (2 Million Views & 12K Subscribers) speaks volumes about the success of our approach.
- While our primary expertise is on Development, Design & Architecture Java & Related Frameworks (Spring, Struts, Hibernate) we are expanding into the front-end world (Bootstrap, JQuery, Angular
```

JS).

###Our Beliefs
- Best Course are interactive and fun.
- Foundations for building high quality applications are best laid down while learning.

###Our Approach
- Problem Solution based Step by Step Hands-on Learning
- Practical, Real World Application Examples.
- We use 80-20 Rule. We discuss 20% things used 80% of time in depth. We touch upon other things briefly equipping you with enough knowledge to find out more on your own.
- We will be developing a demo application in the course, which could be reused in your projects, saving hours of your effort.
- All the code is available on Github, for most steps.

###Useful Links
- [Our Website](http://www.in28minutes.com)
- [Youtube Courses](https://www.youtube.com/user/rithustutorials/playlists)
- [Udemy Courses](https://www.udemy.com/user/in28minutes/)
- [Facebook](http://facebook.com/in28minutes)
- [Twitter](http://twitter.com/in28minutes)
- [Google Plus](https://plus.google.com/u/3/110861829188024231119)

###Other Courses
- [Spring Framework](https://www.udemy.com/spring-tutorial-for-beginners/)
- [Maven](http://www.in28minutes.com/p/maven-tutorial-for-beginners.html)
- [Eclipse](http://www.in28minutes.com/p/eclipse-java-video-tutorial.html)
- Java
  * [Java](https://www.youtube.com/watch?v=Y4ftqcYVh5I&list=PLE0D4634AE2DFA591&index=1)
  * [Java Collections](http://www.in28minutes.com/p/java-collections-framework-video.html)
  * [Java OOPS Concepts](https://www.udemy.com/learn-object-oriented-programming-in-java/)
- [Design Patterns](http://www.in28minutes.com/p/design-patterns-tutorial.html)
- [JUnit](https://www.udemy.com/junit-tutorial-for-beginners-with-java-examples/)
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- [Java Interview Guide](http://www.in28minutes.com/p/buy-our-java-interview-guide.html)
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