# Project: Trigonometric Functions – MIPS Assembler

## First Task: sin(x) in C

For the first task, a sine approximation (Taylor series) is required.

For the C program the formula simply is “translated”. But as a factorial(x) is an expensive function (*especially for x >= 15*) the numerator and denominator is calculated from its former term:

Let = 1, 2, 3 … be the for-loop iterator (Number of Taylor term) and the given radian value, then following formula applies:

The C Source file also includes a degreeToRadian(x) function for some user interaction and a power(n, m) function, which is deprecated as only occurs inside the formula.

## Second Task: sin0 in MIPS assembler

For the Range of the sin0 function is representable for a good approximation with 8 Taylor terms. Its accuracy is around 1 and therefor enough to use it in practical ways.

The sin0 function isn’t much special, it is mostly the same as the C code.

## Third Task: sin in MIPS assembler – Range reduction

For x