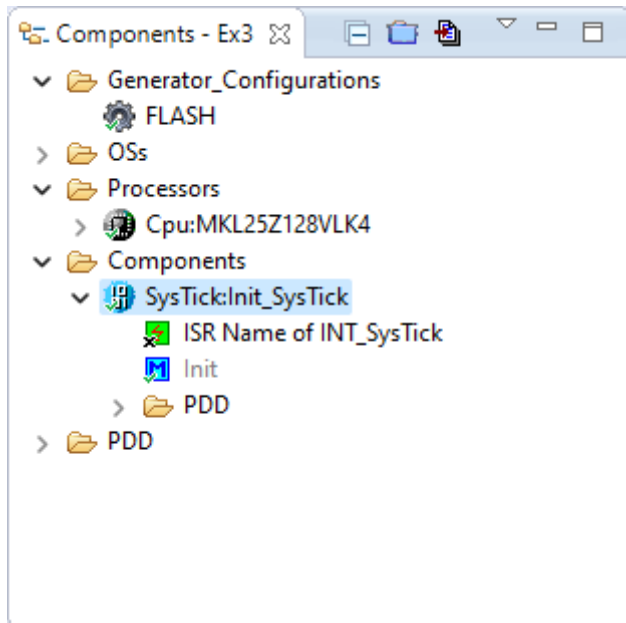## Nome: Gabriel Lujan Bonassi

Nº USP: 11256816

Usando o "Component" SysTick:

Usando o seguinte código no CodeWarrior, para calcular o tempo que demora para executar a operação:

```
int main(void)
/*lint -restore Enable MISRA rule (6.3) checking. */
{
  /* Write your local variable definition here */

  /*** Processor Expert internal initialization. DON'T REMOVE THIS CODE!!! ***/
  PE_low_level_init();
  /*** End of Processor Expert internal initialization.                ***/

  /* Write your code here */
  /* For example: for(;;) { } */
  int tic, tac, delta;
  int a, b, c;

  a = 2; b = 2;
  tic = SysTick_PDD_ReadCurrentValueReg(SysTick_DEVICE);
  c = a + b;
  tac = SysTick_PDD_ReadCurrentValueReg(SysTick_DEVICE);

  delta = tic - tac;

  /*** Don't write any code pass this line, or it will be deleted during code generation. ***/
  /*** RTOS startup code. Macro PEX_RTOS_START is defined by the RTOS component. DON'T MODIFY THIS CODE!!! ***/
  #ifdef PEX_RTOS_START
    PEX_RTOS_START();                  /* Startup of the selected RTOS. Macro is defined by the RTOS component. */
  #endif
  /*** End of RTOS startup code.  ***/
  /*** Processor Expert end of main routine. DON'T MODIFY THIS CODE!!! ***/
  for(;;){}
  /*** Processor Expert end of main routine. DON'T WRITE CODE BELOW!!! ***/
} /*** End of main routine. DO NOT MODIFY THIS TEXT!!! ***/

/* END main */
/*!
** @}
*/
/*
** ###################################################################
**
**     This file was created by Processor Expert 10.3 [05.09]
**     for the Freescale Kinetis series of microcontrollers.
**
** ###################################################################
*/
```

Obtemos o seguinte resultado das variáveis:

Name	Value
(x)= tic	16515180
(x)= tac	16515163
(x)= delta	17
(x)= a	2
(x)= b	2
(x)= c	4

17

Aplicamos as seguintes otimizações no código:

```c
int main(void)
/*lint -restore Enable MISRA rule (6.3) checking. */
{
  /* Write your local variable definition here */

  /*** Processor Expert internal initialization. DON'T REMOVE THIS CODE!!! ***/
  PE_low_level_init();
  /*** End of Processor Expert internal initialization.                    ***/

  /* Write your code here */
  /* For example: for(;;) { } */
  int tic, tac, delta;

  asm("mov r3, #2");
  asm("mov r2, #2");
  tic = SysTick_PDD_ReadCurrentValueReg(SysTick_DEVICE);
  asm("add r3, r2, r3");
  asm("str r3, [r7, #8]");
  tac = SysTick_PDD_ReadCurrentValueReg(SysTick_DEVICE);

  delta = tic - tac;

  /*** Don't write any code pass this line, or it will be deleted during code generation. ***/
  /*** RTOS startup code. Macro PEX_RTOS_START is defined by the RTOS component. DON'T MODIFY THIS CODE!!! ***/
  #ifdef PEX_RTOS_START
    PEX_RTOS_START();                      /* Startup of the selected RTOS. Macro is defined by the RTOS component. */
  #endif
  /*** End of RTOS startup code.  ***/
  /*** Processor Expert end of main routine. DON'T MODIFY THIS CODE!!! ***/
  for(;;){}
  /*** Processor Expert end of main routine. DON'T WRITE CODE BELOW!!! ***/
} /*** End of main routine. DO NOT MODIFY THIS TEXT!!! ***/

/* END main */
/*!
** @}
*/
/*
** ###################################################################
**
**     This file was created by Processor Expert 10.3 [05.09]
**     for the Freescale Kinetis series of microcontrollers.
**
** ###################################################################
*/
```

E obtemos o seguinte resultado das variáveis: