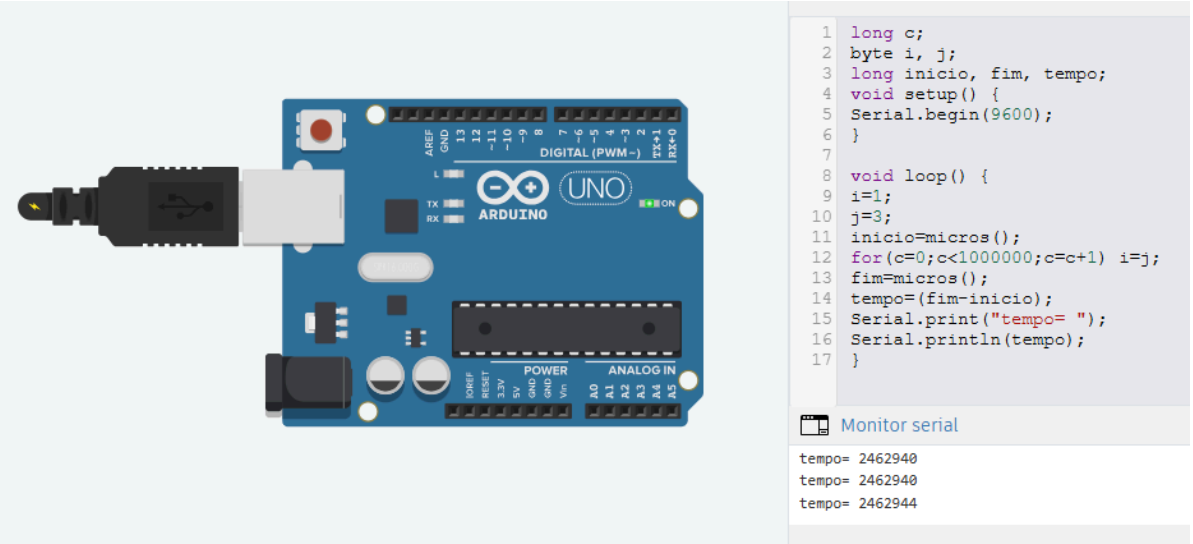
Pontifícia Universidade Católica de Minas Gerais
Alunas: Ana Clara Lonczynski, Letícia da Silva Rocha e **Rayssa Mell de Souza Silva**

Exercício Prático 05

→ Experiência 1 - Avaliação do Arduíno



		i = i op 3			i = i op j		
Tipo	**Tempo Base**	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
byte	2462952	2526092	2525856	2652156	2652156	2652380	2841596
int	2715528	2841592	2778444	3031260	3094408	3094168	3599572
float	3220696	12437828	**XXXXX**	10356164	12690176	**XXXXXX**	10608752

MIPS (ATM328P)

	Constante (Ex.: i=i op 3 ;)			Variável (Ex.: i=i op j;)		
Tipo	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
byte	3,9758	15,8972	5,2853	5,2853	5,2790	2,6410
int	7,9324	15,8942	3,1672	2,6393	2,6410	1,1311

MFLOPS (ATM328P)

	Constante			Variável		
TIPO	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
float	0,1084936	**XXXXXX**	0,1401449	0,1056024	**XXXXXX**	0,1353536

CPI

Tipo	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
byte	36,476752	1, 0064	3,027264	3,027264	3,030848	6,058304
int	2,017024	1,0066	5,051712	6,06208	6,05824	14,144704
float	147,474112	**XXXXXX**	114,16748	151,51168	**XXXXXX**	118,20889

→ Experiência 2 - Seu PC

Rayssa:

		Constante (Ex.: i=i op 3 ;)			Variável (Ex.: i=i op j;)		
Tipo	**Tempo Base**	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
char	29.6 ms	31.4 ms	31.3 ms	31.4 ms	32.8 ms	30.6 ms	37.2 ms
int	29.4 ms	31.3 ms	30.6 ms	32 ms	30.7 ms	30.4 ms	37.6 ms
float	29.6 ms	30.9 ms	**XXXXX**	45.5 ms	37.5 ms	**XXXXX**	46.6 ms

MIPS (Rayssa)

	Constante			Variável		
Tipo	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
char	5555,56	5882,25	5555,56	3125	4545,45	1515,15
int	5263,15	8333,3	3846,15	7692,3	10	1219,51

MFLOPS (Rayssa)

	Constante			Variável		
TIPO	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
float	7692,3	**XXXXXX**	628,93	1219,51	**XXXXXX**	588,23

CIP(Rayssa)

	Constante (Ex.: i=i op 3 ;)			Variável (Ex.: i=i op j;)		
Tipo	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
char	1.0017	0.9465	1.0017	1.7795	0.5550	4.2180
int	1.0569	0.6660	1.4991	0.7215	0.5550	4.5510
float	0.7215	XXXXXXX	8.8131	4.3797	XXXXXX	9.4350

Leticia:

Tipo	**Tempo Base**	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
char	20.2 ms	20.3 ms	20.4 ms	24.9 ms	20.9 ms	21.9 ms	27.7 ms
int	20.5 ms	21 ms	20.3 ms	24.8 ms	20.9 ms	20.7 ms	28.3 ms
float	20.9 ms	29.8 ms	**XXXXX**	30.1 ms	31.3 ms	**XXXXXX**	30.2 ms

MIPS (Leticia)

	Constante (Ex.: i=i op 3 ;)			Variável (Ex.: i=i op j;)		
Tipo	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
char	100000	50000	2127,7	14285,7	5882,4	1333,3
int	20000	50000	2564,1	25000	50000	1282,05

MFLOPS (Leticia)

	Constante			Variável		
TIPO	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
float	1123,6	**XXXXXXX**	1087	961,5	**XXXXXXX**	1075,3

CIP(Leticia)

	Constante (Ex.: i=i op 3 ;)			Variável (Ex.: i=i op j;)		
Tipo	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
char	0.0380	0.0760	1.7851	0.2660	0.6460	2.8501
int	0.1900	0.0760	1.6341	0.1520	0.0760	2.9742

float	3.4078	XXXXXXX	3.4678	3.9602	XXXXXXX	3.5268

Ana:

Tipo	Tempo Base	Soma	Or	Mult	Soma	Or	Mult
char	44 ms	52.5 ms	49.2 ms	45.9 ms	50.6 ms	52.1 ms	48.2 ms
int	44.2 ms	49.5 ms	47.8 ms	52.7 ms	45.9 ms	45.4 ms	67.1 ms
float	45.5 ms	58.4 ms	**XXXXXx**	58.9 ms	62.2 ms	**XXXXXX**	58.8 ms

MIPS (Ana)

	Constante (Ex.: i=i op 3 ;)			Variável (Ex.: i=i op j;)		
Tipo	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
char	1176,4705	1923,0769	5263,1578	1515,151	1234,5679	2380,9523
int	1886,7924	2777,7777	1176,4705	5882,352	8333,3333	0436,6812

MFLOPS (Ana)

	Constante			Variável		
TIPO	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
float	0775,1937	**XXXXXXX**	0746,2686	0598,8023	**XXXXXXX**	0751,8796

CIP(Ana)

	Constante (Ex.: i=i op 3 ;)			Variável (Ex.: i=i op j;)		
Tipo	**Soma**	**Or**	**Mult**	**Soma**	**Or**	**Mult**
char	2,461005	1,50556	0,55011	1,91090	2,34519	1,21603
int	1.5345	1.0423	2.4600	0.4922	0.3474	6.6242
float	3.7369	**XXXXXXX**	3.8817	4.8352	**XXXXXXX**	3.8528

Comparação de Máquinas:

Identificação da máquina (processador,	**Programa em C**	**Performance Test**

frequência de clock, SO e Compilador usado)	Speed up (Inteiros)	Speed up (FP)	Speed up (Inteiros)	Speed up (FP)
Rayssa(Intel Core i5-3337U @ 1.80GHz, 1795,9 MHz, Windows 10, GCC)	44x10^6 / 29.4x 10^6 = 1,4965	45.5x10^6/29.6x 10^6 = 1,5371	6347 / 6347 = 1	3267 / 3267 = 1
Ana (Intel Core i5-6300U @ 2.4GHz, 2895.3, Windows 11, gcc)	44x10^6/44x10^6= 1	45.5x10^6/45.5x 10^6 = 1	9312 / 6347 = 1.46	3347 / 3267 = 1.02
Letícia (AMD ryzen 3200G, 3800.2 , Windows 10, GCC)	44x10^6 / 20.5x 10^6 = 2,146	45.5x10^6 / 20.9x 10^6 = 2,177	20434 / 6347 = 3,2	13491 / 3267 = 4,1

Prog. em C (inteiros)

Identificação do processador, frequência de clock, compilador	Windows	Linux	Speed up
Letícia (AMD ryzen 3200G, 3800.2 , GCC)	20.5 ms	19.5 ms	20.5 / 19.5 = 1,05
Ana (Intel Core i5-6300U @ 2.4GHz, 2895.3, gcc)	44 ms	41.2ms	44 / 41.2 = 1.06
Rayssa(Intel Core i5-3337U @ 1.80GHz, 1795,9 MHz, GCC)	29.4ms	28.7ms	29.4 / 28.7 = 1,0243

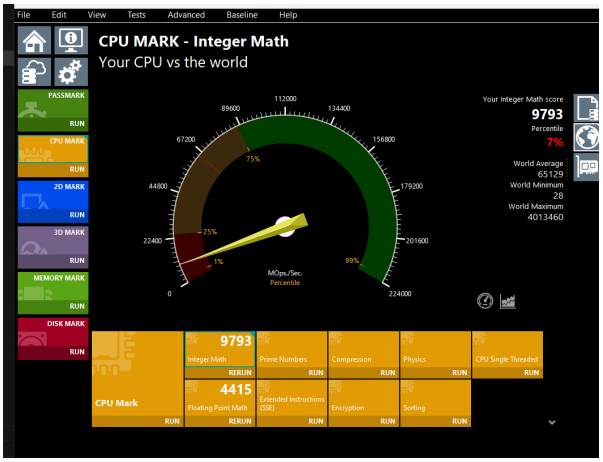
Prog. em C (inteiros)

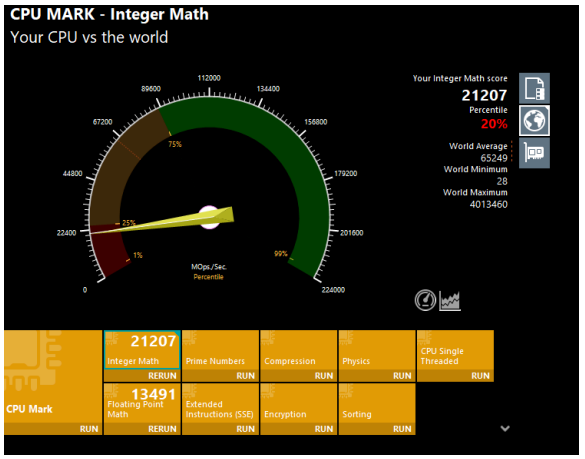
Identificação do processador, frequência de clock, SO	GCC	MSVC	Speed up
Letícia (AMD ryzen 3200G, 3800.2 , Windows 10)	20.5 ms	22.7 ms	22.7 / 20.5 = 1,107
Ana (Intel Core i5-6300U @ 2.4GHz, 2895.3, Windows 11)	44 ms	47 ms	47 / 44 = 1.068
Rayssa(Intel Core i5-3337U @ 1.80GHz, 1795,9 MHz, Windows 10)	29.4 ms	31.3 ms	31.3/29.4= 1.0646

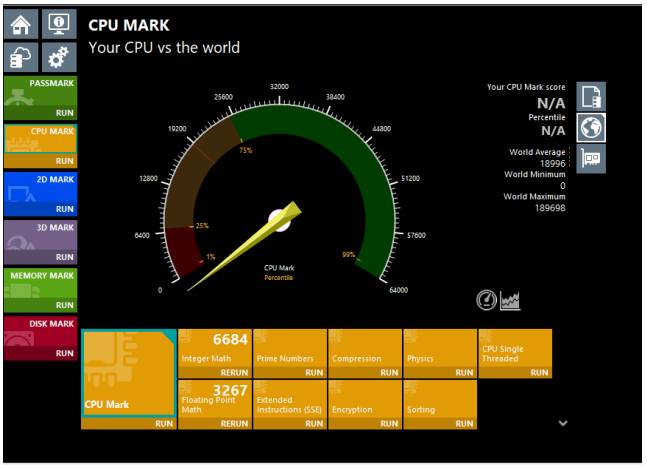
Prog. em C (inteiros)

Identificação do SO e Compilador	Letícia (AMD ryzen 3200G, 3800.2)	Rayssa(Intel Core i5-3337U @ 1.80GHz, 1795,9 MHz)	Speed up
Windows 10, GCC	20.5 ms	29.4 ms	1.4341

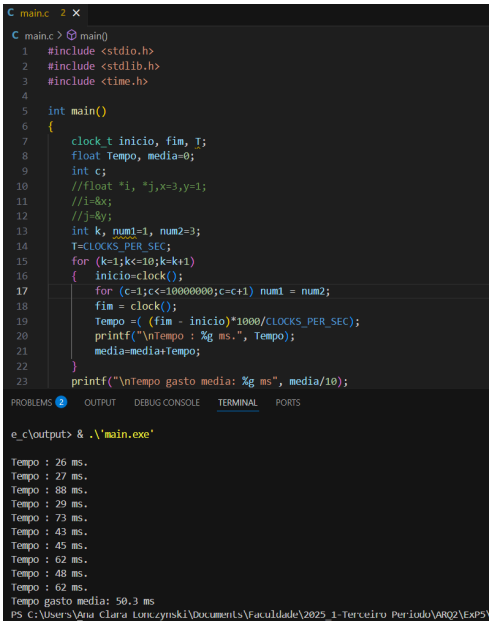
Programas de Benchmarks:







Programas em C:



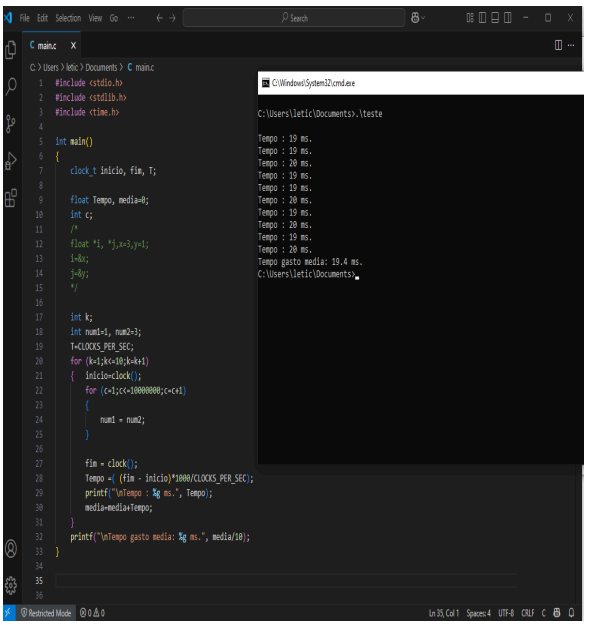
```c
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int main()
{
    clock_t inicio, fim, T;
    float Tempo, media=0;
    int c;
    //float *i, *j,x=3,y=1;
    //i=&x;
    //j=&y;
    int k, num1=1, num2=3;
    T=CLOCKS_PER_SEC;
    for (k=1;k<=10;k=k+1)
    {   inicio=clock();
        for (c=1;c<=10000000;c=c+1) num1 = num2;
        fim = clock();
        Tempo =( (fim - inicio)*1000/CLOCKS_PER_SEC);
        printf("\nTempo : %g ms.", Tempo);
        media=media+Tempo;
    }
    printf("\nTempo gasto media: %g ms", media/10);
```

```
PROBLEMS 2  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

e_c\output> & .\'main.exe'

Tempo : 26 ms.
Tempo : 27 ms.
Tempo : 88 ms.
Tempo : 29 ms.
Tempo : 73 ms.
Tempo : 43 ms.
Tempo : 45 ms.
Tempo : 62 ms.
Tempo : 48 ms.
Tempo : 62 ms.
Tempo gasto media: 50.3 ms
PS C:\Users\Ana Clara Lonczynski\Documents\Faculdade\2025_1-Terceiro Periodo\ARQ2\ExP5\
```



```c
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int main()
{
    clock_t inicio, fim, T;

    float Tempo, media=0;
    int c;
    /*
    float *i, *j,x=3,y=1;
    i=&x;
    j=&y;
    */

    int k;
    int num1=1, num2=3;
    T=CLOCKS_PER_SEC;
    for (k=1;k<=10;k=k+1)
    {   inicio=clock();
        for (c=1;c<=10000000;c=c+1)
        {
            num1 = num2;
        }

        fim = clock();
        Tempo =( (fim - inicio)*1000/CLOCKS_PER_SEC);
        printf("\nTempo : %g ms.", Tempo);
        media=media+Tempo;
    }
    printf("\nTempo gasto media: %g ms.", media/10);
}
```

```
C:\Windows\System32\cmd.exe

C:\Users\letic\Documents>.\teste

Tempo : 19 ms.
Tempo : 19 ms.
Tempo : 20 ms.
Tempo : 19 ms.
Tempo : 19 ms.
Tempo : 20 ms.
Tempo : 19 ms.
Tempo : 20 ms.
Tempo : 19 ms.
Tempo : 20 ms.
Tempo gasto media: 19.4 ms.
C:\Users\letic\Documents>
```