Vấn đề 6

Thành viên:

1. Nguyễn Huy Hoàng (L09)

Mssv: 1911197

2.Lê Xuân Hùng(L03)

Mssv: 1911285

Công thức tính thời gian chạy của chương trình:

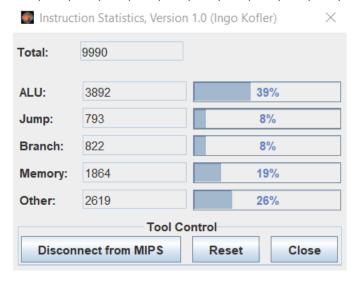
CPU time = (IC * CPI) / Clock rate

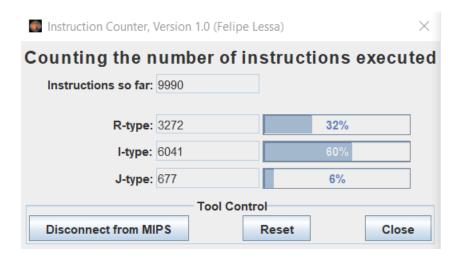
CPI = 1

Clock rate = 2GHz

testcase1:

48,99,10,68,36,46,93,38,67,61,22,16,26,7,72,78,65,2,90,55





```
48 99 10 68 36 46 93 38 67 61 22 16 26 7 72 78 65 2 90 55
48 99 10 68 36 46 93 38 67 61 22 16 26 7 72 78 65 2 90 55
48 99 10 36 68 46 93 38 67 61 22 16 26 7 72 78 65 2 90 55
48 99 10 36 68 46 93 38 67 61 22 16 26 7 72 78 65 2 90 55
10 36 48 68 99 46 93 38 67 61 22 16 26 7 72 78 65 2 90 55
10 36 48 68 99 46 93 38 67 61 22 16 26 7 72 78 65 2 90 55
10 36 48 68 99 46 93 38 61 67 22 16 26 7 72 78 65 2 90 55
10 36 48 68 99 46 93 38 61 67 22 16 26 7 72 78 65 2 90 55
10 36 48 68 99 38 46 61 67 93 22 16 26 7 72 78 65 2 90 55
10 36 38 46 48 61 67 68 93 99 22 16 26 7 72 78 65 2 90 55
10 36 38 46 48 61 67 68 93 99 16 22 26 7 72 78 65 2 90 55
10 36 38 46 48 61 67 68 93 99 16 22 26 7 72 78 65 2 90 55
10 36 38 46 48 61 67 68 93 99 16 22 7 26 72 78 65 2 90 55
10 36 38 46 48 61 67 68 93 99 7 16 22 26 72 78 65 2 90 55
10 36 38 46 48 61 67 68 93 99 7 16 22 26 72 65 78 2 90 55
10 36 38 46 48 61 67 68 93 99 7 16 22 26 72 65 78 2 55 90
10 36 38 46 48 61 67 68 93 99 7 16 22 26 72 65 78 2 55 90
10 36 38 46 48 61 67 68 93 99 7 16 22 26 72 2 55 65 78 90
10 36 38 46 48 61 67 68 93 99 2 7 16 22 26 55 65 72 78 90
2 7 10 16 22 26 36 38 46 48 55 61 65 67 68 72 78 90 93 99
-- program is finished running --
```

CPU time = (IC * CPI) / Clock rate
=
$$(9990*1)/(2*10^9) = 4.995*10^(-6)$$
 (giây)

Testcase2:

13,7,3,2,16,15,14,17,1,12,11,8,4,19,0,6,5,18,10,9

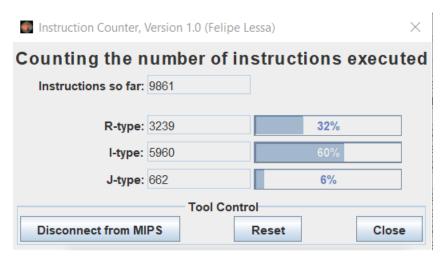
Instruct	tion Counter, \	Version	n 1.0 (Felip	oe Lessa)				\times
Counti	ng the n	um	ber of	instr	ucti	ons	execu	ıted
Instruc	ctions so far:	9983						
	R-type:	3271				32%		7
	I-type:	6036				60%		i
	J-type:					6%		_
	o type.	0,0	Tool Co	ntrol				
Discon	nect from MI	PS	100100	Res	et		Clo	
2133311				Res			0.0.	
Instruct	tion Statistics,	Versio	n 1.0 (Ing	o Kofler))	×		
Total:	9983							
ALU:	3891			39%	/ 0			
Jump:	792			8%				
Branch:	823			8%)			
Memory:	1859			19%	, 0			
Other:	2618			26%	/ 0			
		Tool C	Control					
Discon	nect from MI	PS	Res	et	Clo	se		

```
13 7 3 2 16 15 14 17 1 12 11 8 4 19 0 6 5 18 10 9
7 13 3 2 16 15 14 17 1 12 11 8 4 19 0 6 5 18 10 9
7 13 3 2 16 15 14 17 1 12 11 8 4 19 0 6 5 18 10 9
7 13 2 3 16 15 14 17 1 12 11 8 4 19 0 6 5 18 10 9
2 3 7 13 16 14 15 17 1 12 11 8 4 19 0 6 5 18 10 9
2 3 7 13 16 14 15 17 1 12 11 8 4 19 0 6 5 18 10 9
2 3 7 13 16 14 15 1 12 17 11 8 4 19 0 6 5 18 10 9
2 3 7 13 16 1 12 14 15 17 11 8 4 19 0 6 5 18 10 9
1 2 3 7 12 13 14 15 16 17 11 8 4 19 0 6 5 18 10 9
1 2 3 7 12 13 14 15 16 17 8 11 4 19 0 6 5 18 10 9
1 2 3 7 12 13 14 15 16 17 8 11 4 0 19 6 5 18 10 9
1 2 3 7 12 13 14 15 16 17 8 11 0 4 19 6 5 18 10 9
1 2 3 7 12 13 14 15 16 17 0 4 8 11 19 6 5 18 10 9
1 2 3 7 12 13 14 15 16 17 0 4 8 11 19 5 6 18 10 9
1 2 3 7 12 13 14 15 16 17 0 4 8 11 19 5 6 18 9 10
1 2 3 7 12 13 14 15 16 17 0 4 8 11 19 5 6 9 10 18
1 2 3 7 12 13 14 15 16 17 0 4 5 6 8 9 10 11 18 19
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
-- program is finished running --
```

CPU time = (IC * CPI) / Clock rate
=
$$(9983*1)/(2*10^9) = 4.9915*10^(-6)$$
 (giây)

Testcase3:

34,61,23,1,48,5,42,53,4,66,87,26,96,31,3,19,68,93,46,18





```
34 61 23 1 48 5 42 53 4 66 87 26 96 31 3 19 68 93 46 18
34 61 23 1 48 5 42 53 4 66 87 26 96
34 61 23 1 48 5 42 53 4 66 87 26 96 31
                                       3 19 68
34 61 1 23 48 5 42 53 4 66 87 26 96 31
1 23 34 48 61 5 42 53 4 66 87 26 96 31 3 19 68 93 46 18
  23 34 48 61 5 42 53 4 66 87 26 96
                                    31 3 19 68 93 46
 23 34 48 61 5 42 4 53 66 87 26 96 31 3 19 68
   5 23 34 42 48 53 61 66 87 26 96 31 3 19 68 93 46 18
   5 23 34 42 48 53 61 66 26 87 3 31 96 19 68 93 46 18
  4 5 23 34 42 48 53 61 66 3 26 31 87 96 19 68 93 46 18
   5 23 34 42 48 53 61 66 3 26 31 87 96 19 68 93 46 18
  4 5 23 34 42 48 53 61 66 3 26 31 87 96 19 68 93 18
1 4 5 23 34 42 48 53 61 66 3 18 19 26 31 46 68 87 93 96
1 3 4 5 18 19 23 26 31 34 42 46 48 53 61 66 68 87 93 96
-- program is finished running --
```

CPU time = (IC * CPI) / Clock rate
=
$$(9861*1)/(2*10^9) = 4.9305*10^(-6)$$
 (giây)

Testcase4:

42,87,90,24,86,81,68,85,0,83,92,94,61,98,57,9,82,8,19,50

Instruction	tion Counter, V	ersion	1.0 (Felipe	e Lessa	1)			\times
Counti	ng the n	umb	er of i	nst	ruct	ions	exec	uted
Instruc	ctions so far:	10069						
	D 4	2202				200/		\neg
	R-type:	3283				32%		
	I-type:	6100				60%		
	J-type:	686				6%		
			Tool Con	trol				
Discon	nect from MII	PS		Re	set		Clo	se
Instruct Total:	10069	Version	1.0 (Ingo	Kofle	·)	×		
ALU:	3901			39	%			
Jump:	800			8%	6			
Branch:	827			8%	0			
Memory:	1909			19	%			
Other:	2632			26	%			
		Tool Co	ntrol					
Discon	nect from MIF	PS	Reset	t	Clo	se		

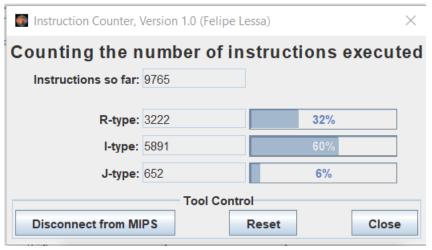
```
42 87 90 24 86 81 68 85 0 83 92 94 61 98 57 9 82 8 19 50
42 87 90 24 86 81 68 85 0 83 92 94 61 98 57 9 82 8 19 50
42 87 90 24 86 81 68 85 0 83 92 94 61 98 57 9 82 8 19 50
42 87 24 86 90 81 68 85 0 83 92 94 61 98 57 9 82 8 19 50
24 42 86 87 90 81 68 85 0 83 92 94 61 98 57 9 82 8 19 50
24 42 86 87 90 68 81 85 0 83 92 94 61 98 57 9 82 8 19 50
24 42 86 87 90 68 81 85 0 83 92 94 61 98 57 9 82 8 19 50
24 42 86 87 90 68 81 0 83 85 92 94 61 98 57 9 82 8 19 50
24 42 86 87 90 0 68 81 83 85 92 94 61 98 57 9 82 8 19 50
0 24 42 68 81 83 85 86 87 90 92 94 61 98 57 9 82 8 19 50
lo 24 42 68 81 83 85 86 87 90 92 94 61 98 57 9 82 8 19 50
0 24 42 68 81 83 85 86 87 90 92 94 61 57 98 9 82 8 19 50
0 24 42 68 81 83 85 86 87 90 92 94 57 61 98 9 82 8 19 50
0 24 42 68 81 83 85 86 87 90 57 61 92 94 98 9 82 8 19 50
0 24 42 68 81 83 85 86 87 90 57 61 92 94 98 9 82 8 19 50
0 24 42 68 81 83 85 86 87 90 57 61 92 94 98 9 82 8 19 50
0 24 42 68 81 83 85 86 87 90 57 61 92 94 98 9 82 8 19 50
0 24 42 68 81 83 85 86 87 90 57 61 92 94 98 8 9 19 50 82
0 24 42 68 81 83 85 86 87 90 8 9 19 50 57 61 82 92 94 98
0 8 9 19 24 42 50 57 61 68 81 82 83 85 86 87 90 92 94 98
-- program is finished running --
```

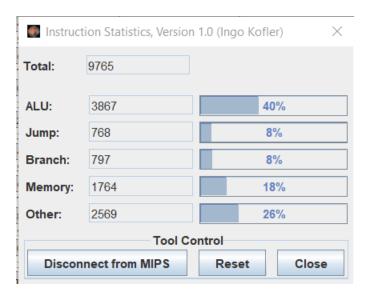
CPU time = (IC * CPI) / Clock rate

 $= (10069*1)/(2*10^9) = 5.0345*10^(-6)$ (giây)

Testcase5:

1,60,75,39,50,73,62,58,66,44,95,68,71,7,96,51,64,93,82,40





```
1 60 75 39 50 73 62 58 66 44 95 68 71 7 96 51 64 93 82 40
1 60 75 39 50 73 62 58 66 44 95 68 71 7 96 51 64 93 82 40
1 60 75 39 50 73 62 58 66 44 95 68 71 7 96 51 64 93 82 40
1 60 39 50 75 73 62 58 66 44 95 68 71 7 96 51 64 93 82 40
1 39 50 60 75 73 62 58 66 44 95 68 71 7 96 51 64 93 82 40
1 39 50 60 75 62 73 58 66 44 95 68 71 7 96 51 64 93 82 40
1 39 50 60 75 62 73 58 44 66 95 68 71 7 96 51 64 93 82 40
1 39 50 60 75 62 73 44 58 66 95 68 71 7 96 51 64 93 82 40
1 39 50 60 75 44 58 62 66 73 95 68
                                   71 7 96 51 64 93 82 40
1 39 44 50 58 60 62 66 73 75 95 68
1 39 44 50 58 60 62 66 73 75 68 95 71 7 96 51 64 93 82 40
1 39 44 50 58 60 62 66 73 75 68 95 71 7 96 51 64 93 82 40
1 39 44 50 58 60 62 66 73 75 68 95 7 71 96 51 64 93 82 40
1 39 44 50 58 60 62 66 73 75 7 68 71 95 96 51 64 93 82 40
1 39 44 50 58 60 62 66 73 75 7 68
                                  71 95 96 51 64
1 39 44 50 58 60 62 66 73 75 7 68 71 95 96 51 64 93 40 82
1 39 44 50 58 60 62 66 73 75 7 68 71 95 96 51 64 40 82 93
1 39 44 50 58 60 62 66 73 75 7 68 71 95 96 40 51 64 82 93
1 39 44 50 58 60 62 66 73 75 7 40 51 64 68 71 82 93 95 96
1 7 39 40 44 50 51 58 60 62 64 66 68 71 73 75 82 93 95 96
-- program is finished running --
```

CPU time = (IC * CPI) / Clock rate
=
$$(9765*1)/(2*10^9) = 4.8825*10^(-6)$$
 (giây)

Testcase6:

25, 94, 9, 27, 99, 57, 85, 47, 29, 80, 23, 61, 92, 3, 78, 18, 38, 46, 70, 21

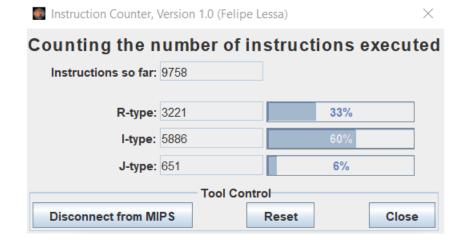
	ng the n					ions	AYA	cut	> _
	tions so far:		01 01	11130	ucti	10113	CAC	Cut	•
	R-type:	3268				32%			
	I-type:	6063				60%			
	J-type:	679				6%			
			Tool Co	ntrol					
Discon	nect from MI	PS		Day	_			Close	Т
	tion Statistics,		1.0 (Ing	o Kofler		×			
Instruct			1.0 (Ing			×			
Instruct	tion Statistics,		1.0 (Ing)	×			
Instruct otal: LU:	tion Statistics,		1.0 (Ing	o Kofler)	×			
Instruct otal: LU: ump:	10010 3894		1.0 (Ing	o Kofler)	×			
	10010 3894 792		1.0 (Ing	399 7%)	×			
Instruct otal: LU: ump: cranch:	10010 3894 792 823		1.0 (Ing	39°	//6	×			
Instruct otal: LU: ump: cranch:	10010 3894 792 823 1883 2618			39° 7° 8%	//6	×			

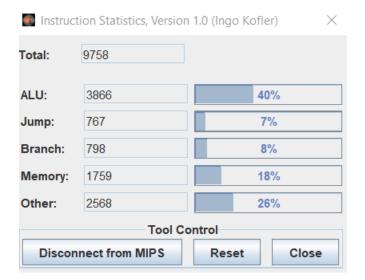
```
25 94 9 27 99 57 85 47 29 80 23 61 92 3 78 18 38 46 70 21
25 94 9 27 99 57 85 47 29 80 23 61 92 3 78 18 38 46 70 21
25 94 9 27 99 57 85 47 29 80 23 61 92 3 78 18 38 46 70 21
25 94 9 27 99 57 85 47 29 80 23 61 92 3 78 18 38 46 70 21
9 25 27 94 99 57 85 47 29 80 23 61 92 3 78 18 38 46 70 21
9 25 27 94 99 57 85 47 29 80 23 61 92 3 78 18 38 46 70 21
9 25 27 94 99 57 85 47 29 80 23 61 92 3 78 18 38 46 70 21
9 25 27 94 99 57 85 29 47 80 23 61 92 3 78 18 38 46 70 21
9 25 27 94 99 29 47 57 80 85 23 61 92 3 78 18 38 46 70 21
9 25 27 29 47 57 80 85 94 99 23 61 92 3 78 18 38 46 70 21
9 25 27 29 47 57 80 85 94 99 23 61 92 3 78 18 38 46 70 21
9 25 27 29 47 57 80 85 94 99 23 61 92 3 78 18 38 46 70 21
9 25 27 29 47 57 80 85 94 99 23 61 3 78 92 18 38 46 70 21
9 25 27 29 47 57 80 85 94 99 3 23 61 78 92 18 38 46 70 21
9 25 27 29 47 57 80 85 94 99 3 23 61 78 92 18 38 46 70 21
9 25 27 29 47 57 80 85 94 99 3 23 61 78 92 18 38 46 21 70
9 25 27 29 47 57 80 85 94 99 3 23 61 78 92 18 38 21 46 70
9 25 27 29 47 57 80 85 94 99 3 23 61 78 92 18 21 38 46 70
9 25 27 29 47 57 80 85 94 99 3 18 21 23 38 46 61 70 78 92
3 9 18 21 23 25 27 29 38 46 47 57 61 70 78 80 85 92 94 99
 - program is finished running --
```

CPU time = (IC * CPI) / Clock rate
=
$$(10010*1)/(2*10^9) = 5.005*10^(-6)$$
 (giây)

Testcase 7:

77,29,33,54,41,74,16,20,21,53,92,67,73,78,79,14,45,57,59,85





```
77 29 33 54 41 74 16 20 21 53 92 67 73 78 79 14 45 57 59 85
29 77 33 54 41 74 16 20 21 53 92 67 73 78 79 14 45 57 59 85
29 77 33 41 54 74 16 20 21 53 92 67 73 78 79 14 45 57 59 85
29 77 33 41 54 74 16 20 21 53 92 67 73 78
                                          79
                                             14
29 33 41 54 77 74 16 20 21 53 92 67 73
29 33 41 54 77 16 74 20 21 53 92 67
                                    73
29 33 41 54 77 16 74 20 21 53 92 67 73 78
                                          79 14 45 57 59 85
29 33 41 54 77 16 20 21 53 74 92 67 73 78
                                          79
16 20 21 29 33 41 53 54 74 77 92 67 73 78
16 20 21 29 33 41 53 54 74 77
                                 92 73
                                       78
16 20 21 29 33 41 53 54 74 77 67 92 73 78
16 20 21 29 33 41 53 54 74 77 67 92 73 78
                                          79
                              67 73 78
                                       79
16 20 21 29 33 41 53 54 74
                                 73 78
                                       79
16 20 21 29 33 41 53 54 74 77 67 73 78 79 92
16 20 21 29 33 41 53 54 74 77 67 73 78 79 92 14 45 57 59 85
16 20 21 29 33 41 53 54 74 77 14 45 57 59 67 73 78
14 16 20 21 29 33 41 45 53 54 57 59 67 73 74 77 78 79 85 92
 - program is finished running --
```

CPU time = (IC * CPI) / Clock rate = $(9758*1)/(2*10^9) = 4.879*10^(-6)$ (giây)

Testcase8:

78,90,96,70,71,0,24,30,86,41,76,36,72,6,99,67,88,89,83,63

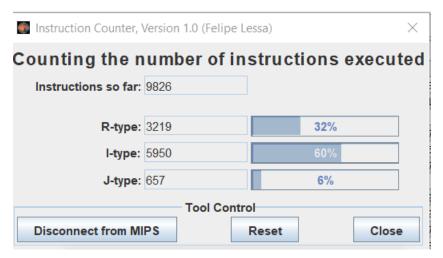
Instruct	ion Counter, \	Version	1.0 (Felip	e Lessa	a)			×
Counti	ng the n	umb	er of	inst	ruct	ions	execu	uted
Instruc	tions so far:	9913						
	R-type:	3250				32%		
	l-type:	5995				60%		
	J-type:	668				6%		
			Tool Co	ntrol				
Discon	nect from MI	PS		Re	set		Clo	se
Instruct	ion Statistics,	Version	1.0 (Ing	o Kofle	r)	\times		
Total:	9913							
ALU:	3883			39	%			
Jump:	782			89	/ o			
Branch:	815			89	/ o			
Memory:	1834			19	%			
Other:	2599			26	%			
		Tool Co	ontrol					
Discon	nect from MI	PS	Res	et	Clo	se		

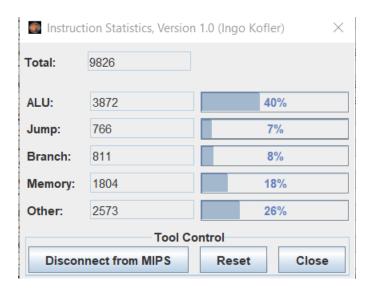
```
78 90 96 70 71 0 24 30 86 41 76 36 72 6 99 67 88 89 83 63
78 90 96 70 71 0 24 30 86 41 76 36 72 6 99 67 88 89 83 63
78 90 96 70 71 0 24 30 86 41 76 36 72 6 99 67 88 89 83 63
78 90 70 71 96 0 24 30 86 41 76 36 72 6 99 67 88 89 83 63
70 71 78 90 96 0 24 30 86 41 76 36 72 6 99 67 88 89 83 63
70 71 78 90 96 0 24 30 86 41 76 36 72 6 99 67 88 89 83 63
  71 78 90 96 0 24 30 41 86 76 36 72 6 99 67 88 89 83 63
70 71 78 90 96 0 24 30 41 86 76 36 72 6 99 67 88 89 83 63
70 71 78 90 96 0 24 30 41 86 76 36 72 6 99 67 88 89 83 63
0 24 30 41 70 71 78 86 90 96 76 36 72 6 99 67 88 89 83 63
0 24 30 41 70 71 78 86 90 96 36 76 72 6 99 67 88 89 83 63
0 24 30 41 70 71 78 86 90 96 36 76 72 6 99 67 88 89 83 63
0 24 30 41 70 71 78 86 90 96 36 76 6 72 99 67 88 89 83 63
0 24 30 41 70 71 78 86 90 96 6 36 72 76 99 67 88 89 83 63
0 24 30 41 70 71 78 86 90 96 6 36 72 76 99 67 88 89 83 63
0 24 30 41 70 71 78 86 90 96 6 36 72 76 99 67 88 89 63 83
0 24 30 41 70 71 78 86 90 96 6 36 72 76 99 67 88 63 83 89
0 24 30 41 70 71 78 86 90 96 6 36 72 76 99 63 67 83 88 89
0 24 30 41 70 71 78 86 90 96 6 36 63 67 72 76 83 88 89 99
0 6 24 30 36 41 63 67 70 71 72 76 78 83 86 88 89 90 96 99
  program is finished running --
```

CPU time = (IC * CPI) / Clock rate
=
$$(9913*1)/(2*10^9) = 4.9565*10^(-6)$$
 (giây)

Testcase9:

42,43,13,18,55,25,79,75,94,46,0,32,2,47,69,15,96,29,52,73





```
42 43 13 18 55 25 79 75 94 46 0 32 2 47 69 15 96 29 52 73
            55 25 79 75 94 46 0 32 2 47 69 15 96 29 52 73
42 43 13 18 55 25 79 75 94 46 0 32 2 47 69 15 96 29 52 73
42 43 13 18 55 25 79 75 94 46 0 32 2 47 69 15 96 29 52 73
13 18 42 43 55 25 79 75 94 46 0 32 2 47 69 15 96 29 52 73
13 18 42 43 55 25 79 75 94 46 0 32 2 47 69 15 96 29 52 73
        43 55 25 79 75 46 94 0 32 2
13 18 42 43 55 25 79 46 75 94 0 32 2 47 69 15 96 29 52 73
13 18 42 43 55 25 46 75 79 94 0 32 2 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 32 2 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 32 2 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 32 2 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 32 2 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 2 32 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 2 32 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 2 32 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 2 32 47 69 15 96 29 52 73
13 18 25 42 43 46 55 75 79 94 0 2 32 47 69 15 29 52 73 96
13 18 25 42 43 46 55 75 79 94 0 2 15 29 32 47 52 69 73 96
0 2 13 15 18 25 29 32 42 43 46 47 52 55 69 73 75 79 94 96
   program is finished running --
```

CPU time = (IC * CPI) / Clock rate
=
$$(9826*1)/(2*10^9) = 4.913*10^(-6)$$
 (giây)

Testcase10:

34,1,76,61,67,75,74,87,30,53,47,56,82,52,55,66,58,8,18,59

Instructi	on Counter, \	Version 1	I.0 (Felip	e Lessa)			X
Countii	ng the n	umb	er of	instru	ıctions	execut	ed
	tions so far:						
	R-type:	3281			32%		
	l-type:				60%		
	J-type:	681			6%		
			Tool Co	ntrol			
Disconr	nect from MI	PS		Rese	t	Close	
Instruct	ion Statistics	, Version	1.0 (Ing	o Kofler)	×	_	
Total:	10028						
						1	
ALU:	3896			39%	o o		
Jump:	797			7%			
Branch:	828			8%			
Memory:	1879			18%	,		
Other:	2628			26%	,		
		Tool Co	ontrol			1	
Discon	nect from M	IIPS	Res	et	Close		

```
34 1 76 61 67 75 74 87 30 53 47 56 82 52 55 66 58 8 18 59
1 34 76 61 67 75 74 87 30 53 47 56 82 52 55 66 58 8 18 59
1 34 76 61 67 75 74 87 30 53 47 56 82 52 55 66 58 8 18 59
1 34 61 67 76 75 74 87 30 53 47 56 82 52 55 66 58 8 18 59
1 34 61 67 76 75 74 87 30 53 47 56 82 52 55 66 58 8 18 59
1 34 61 67 76 74 75 87 30 53 47 56 82 52 55 66 58 8 18 59
  34 61 67 76 74 75 87 30 53 47 56 82 52 55 66 58 8 18 59
1 34 61 67 76 74 75 30 53 87 47 56 82 52 55 66 58 8 18 59
1 34 61 67 76 30 53 74 75 87 47 56 82 52 55 66 58 8 18 59
1 30 34 53 61 67 74 75 76 87 47 56 82 52 55 66 58 8 18 59
1 30 34 53 61 67 74 75 76 87 47 56 82 52 55 66 58 8 18 59
1 30 34 53 61 67 74 75 76 87 47 56 82 52 55 66 58 8 18 59
1 30 34 53 61 67 74 75 76 87 47 56 52 55 82 66 58 8 18 59
1 30 34 53 61 67 74 75 76 87 47 52 55 56 82 66 58 8 18 59
1 30 34 53 61 67 74 75 76 87 47 52 55 56 82 58 66 8 18 59
1 30 34 53 61 67 74 75 76 87 47 52 55 56 82 58 66 8 18 59
1 30 34 53 61 67 74 75 76 87 47 52 55 56 82 58 66 8 18 59
1 30 34 53 61 67 74 75 76 87 47 52 55 56 82 8 18 58 59 66
1 30 34 53 61 67 74 75 76 87 8 18 47 52 55 56 58 59 66 82
1 8 18 30 34 47 52 53 55 56 58 59 61 66 67 74 75 76 82 87
-- program is finished running --
```

CPU time = (IC * CPI) / Clock rate = $(10028*1)/(2*10^9) = 5.014*10^(-6)$ (giây)