

Questão 3

Etapas de execução do programa:



1. No começo da execução, as portas P2, P1 e P0, recebem valor 0 (zero), e as interrupções, tanto interna quanto externa (porta P3.2) são acionadas.

The screenshot displays the Keil uVision IDE interface for a project named 'questao3.uvproj'. The main window shows the assembly code for the 'questao3.c' file, with the following instructions highlighted:

```
60: Sensors = 0;
61: FS90 MOV P1 (0x90), A
62: D2AF SETB EA (0xA8.7)
63: EX0=1;
64: D2AS SETB EX0 (0xA8.0)
```

The left pane shows the registers window, listing registers r0 through r7 and their values (all 0x00). The right pane shows the disassembly window, listing instructions 39 through 69. The bottom pane shows the C code for 'questao3.c', with the following code highlighted:

```
39 Camera2=1;
40 }
41 }
42 if((count0==240)&&(count0<300)){
43 Camera2=0;
44 if(Sensor3==1){
45 Camera3=1;
46 }
47 }
48 if(count0==300){
49 count0=0;
50 }
51 }
52 }
53 void acionar_alarme() interrupt 0{
54 Alarme =!Alarme;
55 }
56 }
57 void main () {
58 P0=0;
59 Camera2 = 0;
60 Sensors = 0;
61 EA=1;
62 EX0=1;
63 ETO = 1;
64 TMOD = 1;
65 }
66 while (1){
67 TRO = 1;
68 }
69 }
```

The bottom right pane shows the 'Call Stack - Locals' window, listing the 'MAIN' function at location 'C0x08A9'. The status bar at the bottom indicates the simulation is running at 11:00:00:19550 sec.

2. Quando as portas P1.0, P1.1, P1.2, P1.3 estão acionadas, significa que há alguém na sala.

The screenshot displays the Keil uVision IDE interface for a project named 'questao3'. The main window shows assembly code with the following instructions:

```
68: 0x00BB 80FC JMP C:0BB9
133: 0x00BD 787F MOV R0,#IDATALEN - 1
134: 0x00BF E4 CLR A
135: 0x00C0 787F MOV R0,#IDATALEN - 1
```

The left pane shows the Register window with the following values:

Register	Value
r0	0x00
r1	0x00
r2	0x00
r3	0x00
r4	0x00
r5	0x00
r6	0x00
r7	0x00

The right pane shows the Parallel Port configuration windows for Port 0, Port 2, Port 1, and Port 3. The configurations are as follows:

- Parallel Port 0: Port 0, P0: 0x00, Pins: 0x00
- Parallel Port 2: Port 2, P2: 0x00, Pins: 0x00
- Parallel Port 1: Port 1, P1: 0x05, Pins: 0x05
- Parallel Port 3: Port 3, P3: 0xFF, Pins: 0xFF

The bottom pane shows the Command window with the following text:

```
Running with Code Size Limit: 2K
Load "C:\Keil_v5\CS1\Maquina_de_cafe\Lab8051\Objects\questao3"
```

The bottom right pane shows the Call Stack window with the following entry:

Name	Location/V...	Type
MAIN	C:\008A9	

C:\Keil_v5\CS1\Maquina_de_cafe\Lab8051\questao3.uvproj - µVision

File Edit View Project Flash Debug Peripherals Tools SVCS Window Help

Registers

Register	Value
r0	0x00
r1	0x00
r2	0x00
r3	0x00
r4	0x00
r5	0x00
r6	0x00
r7	0x00
Sys	
a	0x00
b	0x00
sp_max	0x00
sp_min	0x0000
PC	0x0089
status	56496506
sec	28.2425300
psw	0x00

```
66:      while (!){
67:          TRO = 1;
68:      }
69:      C:0x008B9 D28C SETB TRO(0x8B.4)
70:      C:0x008BB SJMP C:008B9
133:      MOV R0,#IDATALEN - 1
134:      MOV R0,#0x00FF

questao3.c STARTUP.A51
39:      Camera2=1;
40:      }
41:      }
42:      if ((count0>=240)&&(count0<300)){
43:          Camera2=0;
44:          if (Sensor3==1){
45:              Camera3=1;
46:          }
47:      }
48:      if (count0==300){
49:          count0=0;
50:      }
51:      }
52:      }
53: void acionar_alarme() interrupt 0{
54:     Alarme =!Alarme;
55: }
56:
57: void main () {
58:     PO=0;
59:     Cameras = 0;
60:     Sensors = 0;
61:     EA=1;
62:     EX0=1;
63:     ET0 = 1;
64:     TMOD = 1;
65:
66:     while (!){
67:         TRO = 1;
68:     }
69: }
```

Parallel Port 0

Port 0

P0: 0x00 7 Bits 0

Pins: 0x00

Parallel Port 2

Port 2

P2: 0x04 7 Bits 0

Pins: 0x04

Parallel Port 1

Port 1

P1: 0x05 7 Bits 0

Pins: 0x05

Parallel Port 3

Port 3

P3: 0xFF 7 Bits 0

Pins: 0xFF

Command

Running with Code Size Limit: 2K

Load "C:\Keil_v5\CS1\Maquina_de_cafe\Lab8051\Objects\questao3"

Call Stack - Locals

Name	Location/V...	Type
MAIN	C0x08A9	

ASM ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE DEFINE DIR Display Enter EVALUATE

Simulation

ti: 28.2425300 sec L67 C1 CAP_NUM SCRL OVR: R/W

C:\Keil_v5\CS1\Maquina_de_cafe\Lab8051\questao3.uvproj - uVision

File Edit View Project Flash Debug Peripherals Tools SVCS Window Help

Registers

Register	Value
R0	0x00
R1	0x00
R2	0x00
R3	0x00
R4	0x00
R5	0x00
R6	0x00
R7	0x00
Sys	
a	0x00
b	0x00
sp_max	0x13
dptr	0x0000
PC	0x00B9
status	149523086
sec	7476154300
psw	0x00

Disassembly

```
66:      while (1){
67:      ;C:0x0BB9 D28C SETB   TRO = 1;
68:      ;C:0x0BBB      }
133:      80FC SJMP   C:08B9
;C:0x00BB 80FF MOV    R0,#IDATALEN - 1
;C:0x00BB 80FF MOV    R0,#IDATALEN - 1

questao3.c STARTUP.A51
39:      Camera2=1;
40:      }
41:      }
42:      if((count0==240)&&(count0<300)){
43:      Camera2=0;
44:      if(Sensor3==1){
45:      Camera3=1;
46:      }
47:      }
48:      if (count0==300){
49:      count0=0;
50:      }
51:      }
52:
53: void acionar_alarme() interrupt 0{
54:     Alarme =!Alarme;
55: }
56:
57: void main () {
58:     PO=0;
59:     Camera2 = 0;
60:     Sensor3 = 0;
61:     EX=1;
62:     EX0=1;
63:     ETO = 1;
64:     TMOD = 1;
65:
66:     while (1){
67:         TRO = 1;
68:     }
69: }
```

Parallel Port 0

Port 0

P0: 0x00 7 Bits 0

Pins: 0x00

Parallel Port 2

Port 2

P2: 0x08 7 Bits 0

Pins: 0x08

Parallel Port 1

Port 1

P1: 0x00 7 Bits 0

Pins: 0x00

Parallel Port 3

Port 3

P3: 0xFF 7 Bits 0

Pins: 0xFF

Command

Running with Code Size Limit: 2K

Load "C:\Keil_v5\CS1\Maquina_de_cafe\Lab8051\Objects\questao3"

Call Stack - Locals

Name	Location/V...	Type
MAIN	C0x08A9	

ASM ASSIGN BreakDisable BreakEnable BreakKill BreakList BreakSet BreakAccess COVERAGE DEFINE DIR Display Enter EVALUATE

Call Stack - Locals Memory 1

Simulation H1: TA 76543210 var 1.67 P1 1.68 0.000 0.000 0.000 0.000

4. Se houver uma interrupção externa (alguém entrar na sala sem autorização), então o alarme (porta P0.0), será acionado.

The screenshot displays the Keil uVision IDE with the following components:

- Registers:** A table showing the state of registers r0 through r7, all containing 0x00. System registers like sp_max, PC, and states are also listed.
- Code Editor:** Contains C code for a camera system. Key sections include:
 - `while (1) {` loop starting at line 66, setting `TRO = 1;` and `SETB TRO(0x88,4);` at line 67.
 - `questao3.c` starting at line 39, initializing `Camera2=1;` and a loop with conditions `if((count0==240) && (count0<300))` and `if(Sensor3==1)`.
 - `void acionar_alarme() interrupt 0;` at line 53, setting `Alarme = !Alarme;` at line 54.
 - `void main () {` at line 57, initializing `P0=0;`, `Cameras = 0;`, `Sensors = 0;`, `EA=1;`, `EX0=1;`, `ET0 = 1;`, and `TMOD = 1;`.

On the right side, four **Parallel Port** windows are visible:

- Parallel Port 0:** Port 0, P0: 0x01, Pins: 0x00.
- Parallel Port 2:** Port 2, P2: 0x00, Pins: 0x00.
- Parallel Port 1:** Port 1, P1: 0x0D, Pins: 0x0D.
- Parallel Port 3:** Port 3, P3: 0xFB, Pins: 0xFB.

The **Command** window at the bottom shows the command: `Load "C:\Keil_v5\CS1\Maquina_de_cafe\Lab8051\Objects\questao3"`.

The status bar at the bottom indicates: `Simulation`, `t1: 89.0810650 sec`, `L67 C1`, and `CAP: NUM SCRL OVRI: R/W`.

