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ПИиКТ

Лабораторная работа 7

по дисциплине

«Архитектура компьютера»

Выполнили: Студенты группы P33113

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# Задание

Построить таблицу кодов сканирования.

Разработать программу ввода чисел для заданной раскладки.

**1 2 3 4 5**

**6 7 8 9 0**

**-, esc**

# Исходный текст программы

# C51

|  |
| --- |
| # include <reg51.h>  void Int00(void) interrupt 0 {  int i = 0;  float n;  char digit;  char xdata str[8];  char m = 1;  int mm;  char x = P3;  switch (x) {  case 0xfe: digit = '1'; break;  case 0x02: digit = '2'; break;  case 0xfd: digit = '3'; break;  case 0x79: digit = '4'; break;  case 0xfb: digit = '5'; break;    case 0x08: digit = '6'; break;  case 0xf7: digit = '7'; break;  case 0x10: digit = '8'; break;  case 0xef: digit = '9'; break;  case 0x01: digit = '0'; break;    case 0xfa: digit = '-'; break;  case 0xbe: digit = ','; break;  case 0xfc: digit = 'e'; break;  default: digit = 0xff;  }  if (digit == ',' || digit == '-') {  mm = m;  str[i++] = digit;  }  if (digit == 'e') {  digit = 0xff;  n /= mm;  }  if (digit != 0xff) {  str[i++] = digit;  m \*= 10;  n = n \* 10 + (digit & 0xff);  }  while (~INT0);  }  int main() {  EX0 = 1;  IT0 = 1;  EA = 1;  while(1);  return 0;  } |

# A51

|  |
| --- |
| ; FUNCTION Int00 (BEGIN)  0000 C0E0 PUSH ACC  0002 C0F0 PUSH B  0004 C083 PUSH DPH  0006 C082 PUSH DPL  0008 C0D0 PUSH PSW  000A 75D000 MOV PSW,#00H  000D C000 PUSH AR0  000F C001 PUSH AR1  0011 C002 PUSH AR2  0013 C003 PUSH AR3  0015 C004 PUSH AR4  0017 C005 PUSH AR5  0019 C006 PUSH AR6  001B C007 PUSH AR7  ; SOURCE LINE # 3  ; SOURCE LINE # 4  001D 750000 R MOV i,#00H  0020 750000 R MOV i+01H,#00H  ; SOURCE LINE # 8  0023 750001 R MOV m,#01H  ; SOURCE LINE # 10  ;---- Variable 'x' assigned to Register 'R7' ----  0026 AFB0 MOV R7,P3  ; SOURCE LINE # 11  0028 EF MOV A,R7  0029 120000 E LCALL ?C?CCASE  002C 0000 R DW ?C0011  002E 01 DB 01H  002F 0000 R DW ?C0003  0031 02 DB 02H  0032 0000 R DW ?C0007  0034 08 DB 08H  0035 0000 R DW ?C0009  0037 10 DB 010H  0038 0000 R DW ?C0005  003A 79 DB 079H  003B 0000 R DW ?C0013  003D BE DB 0BEH  003E 0000 R DW ?C0010  0040 EF DB 0EFH  0041 0000 R DW ?C0008  0043 F7 DB 0F7H  0044 0000 R DW ?C0012  0046 FA DB 0FAH  0047 0000 R DW ?C0006  0049 FB DB 0FBH  004A 0000 R DW ?C0014  004C FC DB 0FCH  004D 0000 R DW ?C0004  004F FD DB 0FDH  0050 0000 R DW ?C0002  0052 FE DB 0FEH  0053 0000 DW 00H  0055 0000 R DW ?C0015  ; SOURCE LINE # 12  0057 ?C0002:  0057 750031 R MOV digit,#031H  005A 803F SJMP ?C0001  C51 COMPILER V9.60.0.0 LAB7 11/10/2020 20:11:00 PAGE 3  ; SOURCE LINE # 13  005C ?C0003:  005C 750032 R MOV digit,#032H  005F 803A SJMP ?C0001  ; SOURCE LINE # 14  0061 ?C0004:  0061 750033 R MOV digit,#033H  0064 8035 SJMP ?C0001  ; SOURCE LINE # 15  0066 ?C0005:  0066 750034 R MOV digit,#034H  0069 8030 SJMP ?C0001  ; SOURCE LINE # 16  006B ?C0006:  006B 750035 R MOV digit,#035H  006E 802B SJMP ?C0001  ; SOURCE LINE # 18  0070 ?C0007:  0070 750036 R MOV digit,#036H  0073 8026 SJMP ?C0001  ; SOURCE LINE # 19  0075 ?C0008:  0075 750037 R MOV digit,#037H  0078 8021 SJMP ?C0001  ; SOURCE LINE # 20  007A ?C0009:  007A 750038 R MOV digit,#038H  007D 801C SJMP ?C0001  ; SOURCE LINE # 21  007F ?C0010:  007F 750039 R MOV digit,#039H  0082 8017 SJMP ?C0001  ; SOURCE LINE # 22  0084 ?C0011:  0084 750030 R MOV digit,#030H  0087 8012 SJMP ?C0001  ; SOURCE LINE # 24  0089 ?C0012:  0089 75002D R MOV digit,#02DH  008C 800D SJMP ?C0001  ; SOURCE LINE # 25  008E ?C0013:  008E 75002C R MOV digit,#02CH  0091 8008 SJMP ?C0001  ; SOURCE LINE # 26  0093 ?C0014:  0093 750065 R MOV digit,#065H  0096 8003 SJMP ?C0001  ; SOURCE LINE # 27  0098 ?C0015:  0098 7500FF R MOV digit,#0FFH  ; SOURCE LINE # 28  009B ?C0001:  ; SOURCE LINE # 29  009B E500 R MOV A,digit  009D 642C XRL A,#02CH  009F 6005 JZ ?C0017  00A1 E500 R MOV A,digit  00A3 B42D21 CJNE A,#02DH,?C0016  00A6 ?C0017:  ; SOURCE LINE # 30  00A6 AF00 R MOV R7,m  C51 COMPILER V9.60.0.0 LAB7 11/10/2020 20:11:00 PAGE 4  00A8 EF MOV A,R7  00A9 33 RLC A  00AA 95E0 SUBB A,ACC  00AC F500 R MOV mm,A  00AE 8F00 R MOV mm+01H,R7  ; SOURCE LINE # 31  00B0 0500 R INC i+01H  00B2 E500 R MOV A,i+01H  00B4 AE00 R MOV R6,i  00B6 7002 JNZ ?C0026  00B8 0500 R INC i  00BA ?C0026:  00BA 14 DEC A  00BB 2400 R ADD A,#LOW str  00BD F582 MOV DPL,A  00BF 7400 R MOV A,#HIGH str  00C1 3E ADDC A,R6  00C2 F583 MOV DPH,A  00C4 E500 R MOV A,digit  00C6 F0 MOVX @DPTR,A  ; SOURCE LINE # 32  00C7 ?C0016:  ; SOURCE LINE # 33  00C7 E500 R MOV A,digit  00C9 B46536 CJNE A,#065H,?C0018  ; SOURCE LINE # 34  00CC 7500FF R MOV digit,#0FFH  ; SOURCE LINE # 35  00CF AF00 R MOV R7,n+03H  00D1 AE00 R MOV R6,n+02H  00D3 AD00 R MOV R5,n+01H  00D5 AC00 R MOV R4,n  00D7 C004 PUSH AR4  00D9 C005 PUSH AR5  00DB C006 PUSH AR6  00DD C007 PUSH AR7  00DF AC00 R MOV R4,mm  00E1 AD00 R MOV R5,mm+01H  00E3 EC MOV A,R4  00E4 120000 E LCALL ?C?FCASTI  00E7 A804 MOV R0,AR4  00E9 A905 MOV R1,AR5  00EB AA06 MOV R2,AR6  00ED AB07 MOV R3,AR7  00EF D007 POP AR7  00F1 D006 POP AR6  00F3 D005 POP AR5  00F5 D004 POP AR4  00F7 120000 E LCALL ?C?FPDIV  00FA 8F00 R MOV n+03H,R7  00FC 8E00 R MOV n+02H,R6  00FE 8D00 R MOV n+01H,R5  0100 8C00 R MOV n,R4  ; SOURCE LINE # 36  0102 ?C0018:  ; SOURCE LINE # 37  0102 AF00 R MOV R7,digit  0104 EF MOV A,R7  0105 33 RLC A  0106 95E0 SUBB A,ACC  0108 FE MOV R6,A  0109 EF MOV A,R7  C51 COMPILER V9.60.0.0 LAB7 11/10/2020 20:11:00 PAGE 5  010A F4 CPL A  010B 4E ORL A,R6  010C 6052 JZ ?C0020  ; SOURCE LINE # 38  010E 0500 R INC i+01H  0110 E500 R MOV A,i+01H  0112 AE00 R MOV R6,i  0114 7002 JNZ ?C0027  0116 0500 R INC i  0118 ?C0027:  0118 14 DEC A  0119 2400 R ADD A,#LOW str  011B F582 MOV DPL,A  011D 7400 R MOV A,#HIGH str  011F 3E ADDC A,R6  0120 F583 MOV DPH,A  0122 E500 R MOV A,digit  0124 F0 MOVX @DPTR,A  ; SOURCE LINE # 39  0125 E500 R MOV A,m  0127 75F00A MOV B,#0AH  012A A4 MUL AB  012B F500 R MOV m,A  ; SOURCE LINE # 40  012D E4 CLR A  012E FF MOV R7,A  012F FE MOV R6,A  0130 7D20 MOV R5,#020H  0132 7C41 MOV R4,#041H  0134 AB00 R MOV R3,n+03H  0136 AA00 R MOV R2,n+02H  0138 A900 R MOV R1,n+01H  013A A800 R MOV R0,n  013C 120000 E LCALL ?C?FPMUL  013F C004 PUSH AR4  0141 C005 PUSH AR5  0143 C006 PUSH AR6  0145 C007 PUSH AR7  0147 AC00 R MOV R4,digit  0149 E4 CLR A  014A 120000 E LCALL ?C?FCASTC  014D D003 POP AR3  014F D002 POP AR2  0151 D001 POP AR1  0153 D000 POP AR0  0155 120000 E LCALL ?C?FPADD  0158 8F00 R MOV n+03H,R7  015A 8E00 R MOV n+02H,R6  015C 8D00 R MOV n+01H,R5  015E 8C00 R MOV n,R4  ; SOURCE LINE # 41  0160 ?C0020:  ; SOURCE LINE # 42  0160 A2B2 MOV C,INT0  0162 B3 CPL C  0163 40FB JC ?C0020  ; SOURCE LINE # 43  0165 D007 POP AR7  0167 D006 POP AR6  0169 D005 POP AR5  016B D004 POP AR4  016D D003 POP AR3  C51 COMPILER V9.60.0.0 LAB7 11/10/2020 20:11:00 PAGE 6  016F D002 POP AR2  0171 D001 POP AR1  0173 D000 POP AR0  0175 D0D0 POP PSW  0177 D082 POP DPL  0179 D083 POP DPH  017B D0F0 POP B  017D D0E0 POP ACC  017F 32 RETI  ; FUNCTION Int00 (END)  ; FUNCTION main (BEGIN)  ; SOURCE LINE # 45  ; SOURCE LINE # 46  0000 D2A8 SETB EX0  ; SOURCE LINE # 47  0002 D288 SETB IT0  ; SOURCE LINE # 48  0004 D2AF SETB EA  0006 ?C0023:  ; SOURCE LINE # 49  0006 80FE SJMP ?C0023  0008 22 RET  ; FUNCTION main (END) |

# Распечатка загрузочного файла

|  |
| --- |
| :03000300020B5A93  :100B5A00C0E0C0F0C083C082C0D075D000C000C061  :0D0B6A0001C002C003C004C005C006C007E2  :100B7700750800750900750F01AFB0EF120B340B44  :100B8700DE010BB6020BCA080BD4100BC0790BE8B9  :100B9700BE0BD9EF0BCFF70BE3FA0BC5FB0BEDFC45  :100BA7000BBBFD0BB1FE00000BF2750E31803F75DC  :100BB7000E32803A750E338035750E348030750EDF  :100BC70035802B750E368026750E378021750E38C9  :100BD700801C750E398017750E308012750E2D80AA  :100BE7000D750E2C8008750E658003750EFFE50EDA  :100BF700642C6005E50EB42D21AF0FEF3395E0F5BA  :100C0700108F110509E509AE0870020508142400C4  :100C1700F58274003EF583E50EF0E50EB465367592  :100C27000EFFAF0DAE0CAD0BAC0AC004C005C0067D  :100C3700C007AC10AD11EC120AA3A804A905AA06B7  :100C4700AB07D007D006D005D004120A018F0D8E4E  :100C57000C8D0B8C0AAF0EEF3395E0FEEFF44E6070  :100C6700520509E509AE0870020508142400F5824B  :100C770074003EF583E50EF0E50F75F00AA4F50F55  :100C8700E4FFFE7D207C41AB0DAA0CA90BA80A123C  :100C970008F8C004C005C006C007AC0EE4120AA8D5  :100CA700D003D002D001D0001208078F0D8E0C8D13  :080CB7000B8C0AA2B2B340FB52  :100CBF00D007D006D005D004D003D002D001D00089  :0B0CCF00D0D0D082D083D0F0D0E03233  :090CE600D2A8D288D2AF80FE2210  :10080000020B11E86480F8E933E83360110460F00A  :10081000ED33EC337009E8FCE9FDEAFEEBFF22045E  :1008200060DED3EB9FEA9EE99DE8C2E78CF0C2F759  :1008300095F0400CE8CCF8E9CDF9EACEFAEBCFFB25  :10084000120ADC85D0F05804700320D5B3E8047098  :10085000075002B2D5020B1B92D5EC0460F7E4CC32  :10086000C0E0C398F8603B94186008400DD0E0FBEE  :10087000020AF3E4FBFAC9FC8028E830E406E4C984  :10088000FBE4CAFCE830E305E4C9CACBFCE8540742  :100890006010F8C3E913F9EA13FAEB13FBEC13FC4D  :1008A000D8F130F52FC3E49CFCEF9BFFEE9AFEEDF0  :1008B00099FDD0E0FBEF4E4D4C701222DB03020B92  :1008C00018EC2CFCEF33FFEE33FEED33FDED30E79B  :1008D000EB020AF3EF2BFFEE3AFEED39FDD0E0FB21  :1008E00050130BBB0003020B1BED13FDEE13FEEFC9  :0808F00013FFEC13FC020AF3F4  :1008F800EC4D6011E8497017ED33EC3304600DE4FA  :10090800FCFFFEFD22E933E8330470F8020B1112F4  :100918000ADC58046009E4CC2481500628500902F6  :100928000B1B284003020B18C0E0EB4A7044B98047  :1009380006D0E0FB020B07EF4E701CBD8008EBFFF2  :10094800EAFEE9FD80EBE98DF0A4FEE5F00209E19D  :10095800E9CDF9EAFEEBFFEF89F0A4FCE5F0CE89DA  :10096800F0A42EFFE435F0CD89F0A42DFEE435F097  :100978008067EF4E7005BD80D780C3EF8BF0A4ACC5  :10098800F0EE8BF0A42CFCE435F0F8EF8AF0A42C00  :10099800E5F038FCE433CB8DF0A42CFCE5F03BF813  :1009A800EE8AF0A42CFCE5F038F8E433CF89F0A403  :1009B8002CFCE5F038CF3400CE89F0A42FFFE5F009  :1009C8003EFEE433C98DF0A42EFEE5F039CD8AF061  :1009D800A42FFFE5F03EFEE43DFD33D0E0FB5007D9  :1009E8000BBB000F020B1BEC2CFCEF33FFEE33FEAE  :0609F800ED33FD020AF3DD  :1009FE00020B1BEC5D046005E859047003020B1139  :100A0E00120ADC580460F6EC4860F2EC7004FDFE4D  :100A1E00FF22C860DB2481C85009C39860025006CB  :100A2E00020B189850CAF582E9294B4A7005AB8221  :100A3E00020B0775F0007C1A7880C3EF9BEE9AEDDF  :100A4E0099400DC3EF9BFFEE9AFEED99FDE842F043  :100A5E00DC23ACF0D0E0FFD0E0FED0E0FDAB822096  :100A6E00E7101BEB60BAEC2CFCEF33FFEE33FEED20  :100A7E0033FD020AF3E803F830E705C0F075F00025  :100A8E00EF2FFFEE33FEED33FD40B830E7C280AA04  :100A9E0075F020800E75F010800575F0087D007ED3  :100AAE00007F003392D530D503120B26EC33401065  :100ABE00EF33FFEE33FEED33FDEC33FCD5F0ED22DC  :0E0ACE00E5F0247EA2D513CC92E7CDCEFF2218  :100ADC00E9D2E7C933E833F892D5EDD2E7CD33EC60  :070AEC0033FC5002B2D522D9  :100AF300EC30E7100FBF000C0EBE00080DBD000464  :100B03000BEB6014A2D5EB13FCED92E7FD2274FF0F  :100B1300FCFDFEFF22E480F8A2D574FF13FC7D8068  :030B2300E480EF7C  :03000000020CDA15  :0C0CDA00787FE4F6D8FD758111020CE66D  :0E0B2600C3E49FFFE49EFEE49DFDE49CFC22E0  :100B3400D083D082F8E4937012740193700DA3A350  :100B440093F8740193F5828883E473740293686064  :060B5400EFA3A3A380DF64  :00000001FF |

# Вывод

Лабораторная на практическом примере показала, как микроконтроллеры обрабатывают и интерпретируют сигналы прерывания с устройства ввода-вывода на примере клавиатуры.