

Answer all questions .....week 6...

1. Write a program in ARM7TDMI-ISA to find the sum of all the digits in an 32bit number.

.DATA

A: .WORD 0X12345678  
SUM: .WORD

.TEXT

LDR R5,=A  
LDR R6,=SUM  
LDR R0,[R5]  
MOV R1,#32  
MOV R4,#0  
MOV R8,#0

LABEL:

MOV R3,#0  
MOVS R0,R0,LSR #1  
ADDCS R3,R3,#1  
MOV R7,R3,LSL R8  
ADD R4,R4,R7  
SUB R1,R1,#1  
ADD R8,R8,#1  
CMP R8,#4  
BEQ LOOP

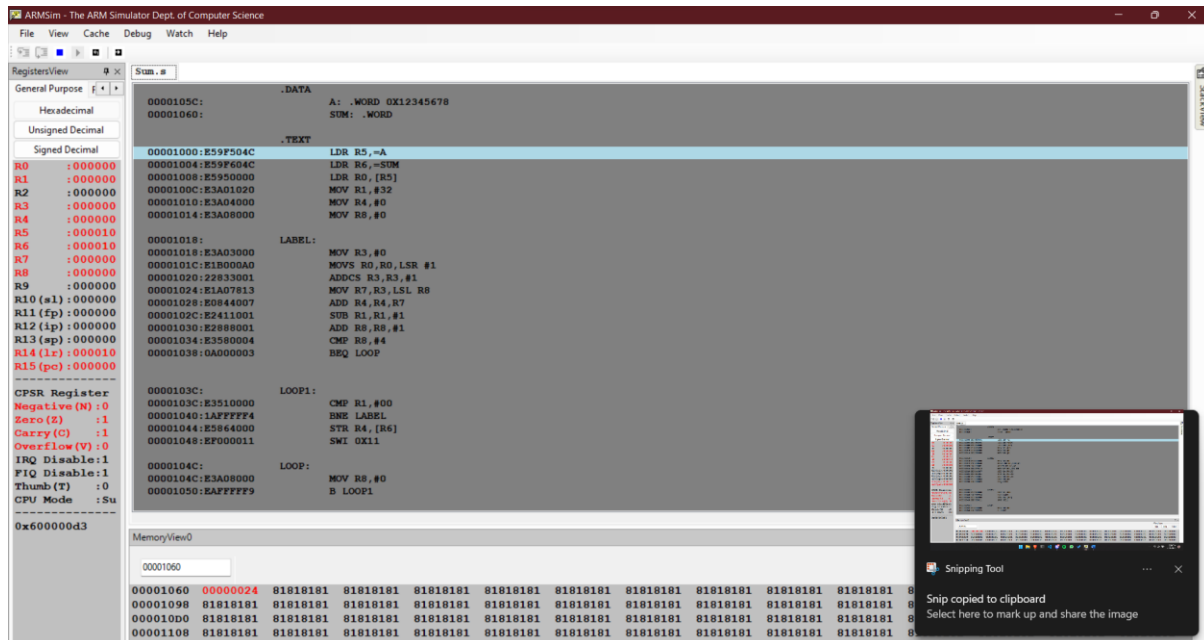
LOOP1:

CMP R1,#00  
BNE LABEL  
STR R4,[R6]  
SWI 0X11

LOOP:

MOV R8,#0  
B LOOP1

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2. Write a program in ARM7TDMI-ISA to find the number of occurrences of a given character in a string.

Example: Given string : My name is Bond.

Character : 'n'.

Expected Output : Display 2 in a register.

.DATA

S: .ASCIZ "My name is Bond"

.TEXT

LDR R0,S

MOV R2,#0

LOOP:

LDRB R1,[R0],#1

CMP R1,'#n'

BEQ ADD

LOOP1:

CMP R1,#0

BNE LOOP

B END

The screenshot displays the ARM Simulator interface. The top menu bar includes File, View, Cache, Debug, Watch, and Help. The main window is divided into two primary sections: RegistersView and MemoryView.

**RegistersView:** This panel shows the state of various registers. The left sidebar lists registers from R0 to R15, along with CPSR, Negative (N), Zero (Z), Carry (C), Overflow (V), IRQ Disable, FIQ Disable, Thumb (T), and CPU Mode. The right pane displays the hexadecimal values for these registers. For example, R0 is 00001030, R1 is 00000000, and R2 is 00000000. The CPSR register shows N:0, Z:1, C:1, V:0, and other flags.

**MemoryView:** This panel shows the memory content starting at address 0x600000d3. The left sidebar shows the address range 00001030 to 0000103c. The right pane displays the memory content in hexadecimal, showing a sequence of 0x1030, 0x1031, 0x1032, 0x1033, 0x1034, 0x1035, 0x1036, 0x1037, 0x1038, 0x1039, 0x103a, 0x103b, 0x103c, 0x103d, 0x103e, 0x103f, 0x1040, 0x1041, 0x1042, 0x1043, 0x1044, 0x1045, 0x1046, 0x1047, 0x1048, 0x1049, 0x104a, 0x104b, 0x104c, 0x104d, 0x104e, 0x104f, 0x1050, 0x1051, 0x1052, 0x1053, 0x1054, 0x1055, 0x1056, 0x1057, 0x1058, 0x1059, 0x105a, 0x105b, 0x105c, 0x105d, 0x105e, 0x105f, 0x1060, 0x1061, 0x1062, 0x1063, 0x1064, 0x1065, 0x1066, 0x1067, 0x1068, 0x1069, 0x106a, 0x106b, 0x106c, 0x106d, 0x106e, 0x106f, 0x1070, 0x1071, 0x1072, 0x1073, 0x1074, 0x1075, 0x1076, 0x1077, 0x1078, 0x1079, 0x107a, 0x107b, 0x107c, 0x107d, 0x107e, 0x107f, 0x1080, 0x1081, 0x1082, 0x1083, 0x1084, 0x1085, 0x1086, 0x1087, 0x1088, 0x1089, 0x108a, 0x108b, 0x108c, 0x108d, 0x108e, 0x108f, 0x1090, 0x1091, 0x1092, 0x1093, 0x1094, 0x1095, 0x1096, 0x1097, 0x1098, 0x1099, 0x109a, 0x109b, 0x109c, 0x109d, 0x109e, 0x109f, 0x10a0, 0x10a1, 0x10a2, 0x10a3, 0x10a4, 0x10a5, 0x10a6, 0x10a7, 0x10a8, 0x10a9, 0x10aa, 0x10ab, 0x10ac, 0x10ad, 0x10ae, 0x10af, 0x10b0, 0x10b1, 0x10b2, 0x10b3, 0x10b4, 0x10b5, 0x10b6, 0x10b7, 0x10b8, 0x10b9, 0x10ba, 0x10bb, 0x10bc, 0x10bd, 0x10be, 0x10bf, 0x10c0, 0x10c1, 0x10c2, 0x10c3, 0x10c4, 0x10c5, 0x10c6, 0x10c7, 0x10c8, 0x10c9, 0x10ca, 0x10cb, 0x10cc, 0x10cd, 0x10ce, 0x10cf, 0x10d0, 0x10d1, 0x10d2, 0x10d3, 0x10d4, 0x10d5, 0x10d6, 0x10d7, 0x10d8, 0x10d9, 0x10da, 0x10db, 0x10dc, 0x10dd, 0x10de, 0x10df, 0x10e0, 0x10e1, 0x10e2, 0x10e3, 0x10e4, 0x10e5, 0x10e6, 0x10e7, 0x10e8, 0x10e9, 0x10ea, 0x10eb, 0x10ec, 0x10ed, 0x10ee, 0x10ef, 0x10f0, 0x10f1, 0x10f2, 0x10f3, 0x10f4, 0x10f5, 0x10f6, 0x10f7, 0x10f8, 0x10f9, 0x10fa, 0x10fb, 0x10fc, 0x10fd, 0x10fe, 0x10ff, 0x1100, 0x1101, 0x1102, 0x1103, 0x1104, 0x1105, 0x1106, 0x1107, 0x1108, 0x1109, 0x110a, 0x110b, 0x110c, 0x110d, 0x110e, 0x110f, 0x1110, 0x1111, 0x1112, 0x1113, 0x1114, 0x1115, 0x1116, 0x1117, 0x1118, 0x1119, 0x111a, 0x111b, 0x111c, 0x111d, 0x111e, 0x111f, 0x1120, 0x1121, 0x1122, 0x1123, 0x1124, 0x1125, 0x1126, 0x1127, 0x1128, 0x1129, 0x112a, 0x112b, 0x112c, 0x112d, 0x112e, 0x112f, 0x1130, 0x1131, 0x1132, 0x1133, 0x1134, 0x1135, 0x1136, 0x1137, 0x1138, 0x1139, 0x113a, 0x113b, 0x113c, 0x113d, 0x113e, 0x113f, 0x1140, 0x1141, 0x1142, 0x1143, 0x1144, 0x1145, 0x1146, 0x1147, 0x1148, 0x1149, 0x114a, 0x114b, 0x114c, 0x114d, 0x114e, 0x114f, 0x1150, 0x1151, 0x1152, 0x1153, 0x1154, 0x1155, 0x1156, 0x1157, 0x1158, 0x1159, 0x115a, 0x115b, 0x115c, 0x115d, 0x115e, 0x115f, 0x1160, 0x1161, 0x1162, 0x1163, 0x1164, 0x1165, 0x1166, 0x1167, 0x1168, 0x1169, 0x116a, 0x116b, 0x116c, 0x116d, 0x116e, 0x116f, 0x1170, 0x1171, 0x1172, 0x1173, 0x1174, 0x1175, 0x1176, 0x1177, 0x1178, 0x1179, 0x117a, 0x117b, 0x117c, 0x117d, 0x117e, 0x117f, 0x1180, 0x1181, 0x1182, 0x1183, 0x1184, 0x1185, 0x1186, 0x1187, 0x1188, 0x1189, 0x118a, 0x118b, 0x118c, 0x118d, 0x118e, 0x118f, 0x1190, 0x1191, 0x1192, 0x1193, 0x1194, 0x1195, 0x1196, 0x1197, 0x1198, 0x1199, 0x119a, 0x119b, 0x119c, 0x119d, 0x119e, 0x119f, 0x11a0, 0x11a1, 0x11a2, 0x11a3, 0x11a4, 0x11a5, 0x11a6, 0x11a7, 0x11a8, 0x11a9, 0x11aa, 0x11ab, 0x11ac, 0x11ad, 0x11ae, 0x11af, 0x11b0, 0x11b1, 0x11b2, 0x11b3, 0x11b4, 0x11b5, 0x11b6, 0x11b7, 0x11b8, 0x11b9, 0x11ba, 0x11bb, 0x11bc, 0x11bd, 0x11be, 0x11bf, 0x11c0, 0x11c1, 0x11c2, 0x11c3, 0x11c4, 0x11c5, 0x11c6, 0x11c7, 0x11c8, 0x11c9, 0x11ca, 0x11cb, 0x11cc, 0x11cd, 0x11ce, 0x11cf, 0x11d0, 0x11d1, 0x11d2, 0x11d3, 0x11d4, 0x11d5, 0x11d6, 0x11d7, 0x11d8, 0x11d9, 0x11da, 0x11db, 0x11dc, 0x11dd, 0x11de, 0x11df, 0x11e0, 0x11e1, 0x11e2, 0x11e3, 0x11e4, 0x11e5, 0x11e6, 0x11e7, 0x11e8, 0x11e9, 0x11ea, 0x11eb, 0x11ec, 0x11ed, 0x11ee, 0x11ef, 0x11f0, 0x11f1, 0x11f2, 0x11f3, 0x11f4, 0x11f5, 0x11f6, 0x11f7, 0x11f8, 0x11f9, 0x11fa, 0x11fb, 0x11fc, 0x11fd, 0x11fe, 0x11ff, 0x1200, 0x1201, 0x1202, 0x1203, 0x1204, 0x1205, 0x1206, 0x1207, 0x1208, 0x1209, 0x120a, 0x120b, 0x120c, 0x120d, 0x120e, 0x120f, 0x1210, 0x1211, 0x1212, 0x1213, 0x1214, 0