PROGRAM

#include <stdio.h>

// Function prototypes

void generateIfElseTAC(int condition);

void generateSwitchCaseTAC(int value);

void generateForLoopTAC(int start, int end);

void generateWhileLoopTAC(int condition);

void generateDoWhileLoopTAC(int condition);

int main() {

int condition = 1;

int switchValue = 2;

int start = 0;

int end = 5;

printf("Generating TAC for if-else statement:\n");

generateIfElseTAC(condition);

printf("\nGenerating TAC for switch-case statement:\n");

generateSwitchCaseTAC(switchValue);

printf("\nGenerating TAC for for loop:\n");

generateForLoopTAC(start, end);

printf("\nGenerating TAC for while loop:\n");

generateWhileLoopTAC(condition);

printf("\nGenerating TAC for do-while loop:\n");

generateDoWhileLoopTAC(condition);

return 0;

}

// Generate TAC for if-else statement

void generateIfElseTAC(int condition) {

printf("if (condition) {\n");

printf(" // Code for 'true' branch\n");

printf(" t1 = condition\n");

printf(" if (t1 == 1) goto L1\n");

printf(" goto L2\n");

printf("L1:\n");

printf(" // Code for 'true' branch\n");

printf(" t2 = t1 + 1\n");

printf(" // More code...\n");

printf(" goto L3\n");

printf("L2:\n");

printf(" // Code for 'false' branch\n");

printf(" t3 = t1 - 1\n");

printf(" // More code...\n");

printf("L3:\n");

printf(" // End of if-else\n");

printf("}\n");

}

// Generate TAC for switch-case statement

void generateSwitchCaseTAC(int value) {

printf("switch (value) {\n");

printf(" // Code for 'case 1'\n");

printf(" t1 = value\n");

printf(" if (t1 == 1) goto L1\n");

printf(" goto L2\n");

printf("L1:\n");

printf(" // Code for 'case 1'\n");

printf(" t2 = t1 \* 2\n");

printf(" // More code...\n");

printf(" goto L3\n");

printf("L2:\n");

printf(" // Code for 'case 2'\n");

printf(" if (t1 == 2) goto L4\n");

printf(" goto L5\n");

printf("L4:\n");

printf(" t3 = t1 + 2\n");

printf(" // More code...\n");

printf(" goto L3\n");

printf("L5:\n");

printf(" // Code for 'default'\n");

printf(" t4 = t1 - 2\n");

printf(" // More code...\n");

printf("L3:\n");

printf(" // End of switch\n");

printf("}\n");

}

// Generate TAC for for loop

void generateForLoopTAC(int start, int end) {

printf("for (int i = %d; i <= %d; i++) {\n", start, end);

printf(" t1 = i\n");

printf(" // Code inside the loop\n");

printf(" t2 = t1 \* 2\n");

printf(" // More code...\n");

printf("}\n");

}

// Generate TAC for while loop

void generateWhileLoopTAC(int condition) {

printf("while (condition) {\n");

printf(" t1 = condition\n");

printf(" if (t1 == 0) goto L1\n");

printf(" // Code inside the loop\n");

printf(" t2 = t1 + 1\n");

printf(" // More code...\n");

printf(" goto L2\n");

printf("L1:\n");

printf(" // End of loop\n");

printf("}\n");

}

// Generate TAC for do-while loop

void generateDoWhileLoopTAC(int condition) {

printf("do {\n");

printf(" // Code inside the loop\n");

printf(" t1 = condition\n");

printf(" t2 = t1 + 1\n");

printf(" // More code...\n");

printf(" if (t1 == 0) goto L1\n");

printf("L1:\n");

printf(" // End of loop\n");

printf("} while (condition);\n");

}





