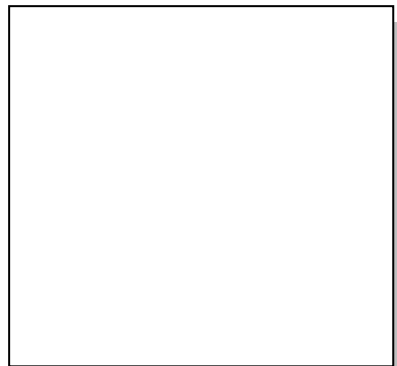Introduction to Selective Structures

OBJECTIVES:
1. Evaluation and use of IF statements.
2. Evaluation of conditional expressions.
3. Evaluation and use of SWITCH statements.

- **You should prepare the preliminary work before coming to the laboratory session**. **Please bring soft copies of the preliminary work with you**.

- **You will be asked to write two new C programs during the laboratory session related with the sequential programming.**

PRELIMINARY WORK:

1. Write separate C programs to evaluate the given program fragments and write the produced outputs in the corresponding boxes. Assume that the variables are `int` type and have the following initial values: a=3, b=5, c= 4, and sum = 0
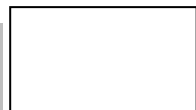
Part a-)

```
if (b%a)
 {
   if (a>b)
     printf("a is greater");
   else
     printf("b is greater");
 }
```

Part b-)

```
if (b%a)
  (a>b) ? printf ("greater a") : printf("greater b");
```

Part c-)

```
(a>b)?sum=a+b:(a<c)?sum=a+c:sum=a+b+c;
printf("sum is %d\n", sum);
```

Part d-)

```
if (a>b)
  {
    sum= a+b;
    printf("sum is %d\n", sum);
  }
else if (a<c)
  {
    sum= a+c;
    printf("sum is %d\n", sum);
  }
 else
  {
   sum= a+b+c;
   printf("sum is %d\n", sum);
  }
```

2. Write an `if` statement that computes and prints the circumference or the area of a square using the formulas:

    `circumference = 4* side` and `area = side * side`

Enter the value of integer variable `side` from the keyboard. Assume that if `user_request` is 1, the program finds the circumference and prints and if it is 2, the program finds the area and prints.

3. Write a program for the following problem. An instructor needs a program that accepts student identification number `std_id` and three exam grades, `exam1`, `exam2` and `final_exam` for a course, as input and then determines and outputs for the student, the semester average and the final letter grade of the course according to the following table:

(Use switch statement in this problem!)

Semester Average	Letter Grade
90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

The semester average for the student is computed using the following formula:

```
semester_average = 0.20 * exam1 + 0.30 * exam2 +
0.50 * final_exam
```

Student identification numbers are integers but not 0 or negative numbers. The program should print an appropriate message when 0 or negative number is entered for the student identification.

A session of the program should have the following appearance:

```
Enter student idno: 1100
Enter exam grade 1: 70
Enter exam grade 2: 80
Enter final exam grade: 100
Semester average for student 1100:  88
Letter grade for student 1100   : B
```

If 0 or negative number is entered for student identification:

```
Enter student idno: 0
Student idno is  wrong.
```