Introduction to Informatics

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Labor 09

Switch statements

- switch (condition)

```
{
 case constant1: statements 1;
 case constant2: statements 2; break;
  ……..
 case constantn-1: statements n-1;
 default: statements n;
}
```

Exercise

- Write a program which inputs two integer numbers and an operation symbol (+,-,*,/). On the basis of the operation symbol calculate the result. Give an error message if the operation is not what we have listed or in case of the division the denominator is zero. (switch)

Solution

```
char op;
int a, b, res;
scanf("%d%c%d", &a, &op, &b);
    switch (op) {
    case '+': res = a + b;  break;
    case '-':  res = a - b;  break;
    case '*':  res = a * b;   break;
    case '/': if (b == 0)
            printf(”Error: Division by zero!");
        else
            res = a / b; break;
    default:
        printf(”Default operation symbol!");
    }
    printf(”Result:%d", res”);
```

FOR loop

```
for (initialization_expression; loop_condition; increment_expression)
   {
        statements;
   }
```

Example:

```
   for(i=1; i<=n; i++)
        {
                ...
        }
```

FOR loop

- Write a program which prints the first **10** integer numbers and their square.

- Write a program which determines the **sum** and **product** of the first **n** number.

Solution

Sum and the product of the numbers:

```
int i, n, sum=0, prod=1;
printf(”n=”); scanf(”%d”,&n);
for (i=1;i<=n;i++)
        {
                sum+=i;
                prod*=i;
        }
printf(”sum of the %d numbers: %d\nproduct of the
%d numbers: %d\n”,n,sum,n,prod);
```

WHILE loop

```
while (condition)
  {
      statements;
  }
```

Example

- Sum of the numbers:

```
i=0;
while (i<=n)
{
   sum+=i;
   i++;
                          /*sum+=i++;*/
}
```

Exercise

- Write a program which inputs the integer numbers from the keyboard until we type zero, and find the minimum element.
- Write a program which inputs the integer numbers from the keyboard until we type zero, and meanwhile it determines if the input number can be divided by three and count how many such numbers are there.
- Write a program which inputs two more digits numbers and prints the sum of the first numbers' digits and product of the second numbers' digits.

Solution

```
int n, count=0, min;
printf(”n=”); scanf(”%d”,&n);
min=n;
while (n!=0)
{
        if (n<min)
                min=n;
        scanf(”%d”,&n);
}
printf (”The minimum number is: %d”,min);
```

Solution

```
int n, count=0;
printf(”n=”); scanf(”%d”,&n);
while (n!=0)
{
        if (n%3==0)
                {printf(”%d can be divided by three\n”,n);
                count++;}
        else
                printf(”%d cannot be divided by three\n”,n);
        scanf(”%d”,&n);
}
printf(”%d numbers were input which were divided by
three\n”,count);
```

Solution

```
int a, b, sum=0, prod=1;
printf(”a=”); scanf(”%d”,&a);
printf(”b=”); scanf(”%d”,&b);
while (a)
        {
        sum+=a%10;
        a=a/10;
        }

while (b)
        {
        prod*=b%10;
        b=b/10;
        }
printf(”sum=%d, prod=%d”, sum, prod);
```