

# MA 511: Computer Programming

## Lecture 6

[http://www.iitg.ernet.in/psm/indexing\\_ma511/y08/index.html](http://www.iitg.ernet.in/psm/indexing_ma511/y08/index.html)

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Semester 1, 2008-09

Mon 10:00-10:55 Tue 11:00-11:55 Fri 9:00-9:55 Class: 1G2

MA512 Lab : Wed 14:00-16:55

# Example

## Read a string than replace each character with an equivalent encoded character

```
char line[80];
int i;
printf("Type a line of text\n");
scanf("%[^\n]", line);
for(i=0; line[i] != '\0'; ++i){
    if(((line[i]>='0') && (line[i]<'9')) || ((line[i]>='A') && (line[i]<'Z')) || ((line[i]>='a') && (line[i]<'z'))){
        putchar(line[i]+1);
    }
    else if (line[i] == '9')
        putchar('0');
    else if (line[i] == 'Z')
        putchar('A');
    else if (line[i] == 'z')
        putchar('a');
    else
        putchar('.');
}
```

Input: IIT Guwahati, 781039, Assam, India.

Output: JJU.Hvxbibuj..892140..Bttbn....Joejb.

# ASCII

Character	ASCII value
-----------	-------------

0	48
---	----

9	57
---	----

A	65
---	----

Z	90
---	----

a	97
---	----

z	122
---	-----

# Assignments

1. Read a string of alphabets (a to z or A to Z) than replace each character with an equivalent encoded character as follows.
2. A/a – 1
3. B/b – 2
4. Z/z- 26

# switch Statement

- Switch statement causes a particular group of statement to be chosen from several available groups.
- The selection is based upon the current value of a expression which is included within the switch statement.

# switch Statement

## Example:

```
switch(choice = toupper(getchar())) {  
    case 'R':  
        printf("RED");  
        break;  
    case 'W':  
        printf("WHITE");  
        break;  
    case 'B':  
        printf("BLUE");  
        break;  
    default:  
        printf("ERROR");  
}
```

# switch Statement

## Example:

```
switch(flag){  
    case -1:  
        printf("y=%f", y=abs(x));  
        break;  
    case 0:  
        printf("y=%f", y=sqrt(x));  
        break;  
    case 1:  
        printf("y=%f", y=x);  
        break;  
    case 2:  
    case 3:  
        printf("y=%f", y= 2* (x-1));  
        break;  
    default:  
        printf("y=0");  
}
```

# switch Statement

**Example:  $ax^2+bx+c=0$**

```
discernment = b*b - 4.0*a*c
```

```
  if (discernment < 0) i=1;
```

```
  else if(discernment==0) i=2;
```

```
  else i=3;
```

```
switch(i){
```

```
  case 1:      discernment = -discernment;
```

```
              imag = sqrt(discernment)/ (2.0*a);
```

```
              real  = -b/ (2.0*a);
```

```
              break;
```

```
  case 2:      equal_root = -b/(2.0*a);
```

```
              break;
```

```
  case 3:      root_1 = (- b + sqrt(discernment)/ (2.0*a);
```

```
              root_2 = (- b - sqrt(discernment)/ (2.0*a);
```

```
}
```



# comma Operator (,)

- ***comma*** operator is used in conjunction with **for** statement.

Example:

– for(**exp1a**, **exp1b**; exp2; exp3)

- Initialize two separate indices would be used simultaneously within a single for loop.

– for(exp1; exp2; **exp3a**, **exp3b**)

- two different indices would be used simultaneously within a single for loop for example one counts forward other counts backward.

# Assignments

- A **Palindrome** is a word, phrase or sentence that reads the same way either forward or backward.
- Example: *noon, Rise to vote, sir!* (if we disregard punctuation and blank space)
- Write a C program that will enter a line of text containing a word, a phrase or a sentence, and determine whether or not the text is a palindrome.

# break Statement

- It used to terminate or to exit from a switch it can be used loop such as **for**, **while**, **do-while** or **switch** statements.

## Example:

```
main(){
    int i, n;
    scanf("%d", &n);
    for(i=2; i<=ceil(sqrt(n)); i=i+1){
        if(!(n%i)){
            printf("n is composite");
            break;
        }
    }
    if(i>=ceil(sqrt(n))) printf("n is prime");
}
```

# return Statement

- It used to terminate or to exit from a switch it can be used loop such as **for**, **while**, **do-while** or **switch** statements.

## Example:

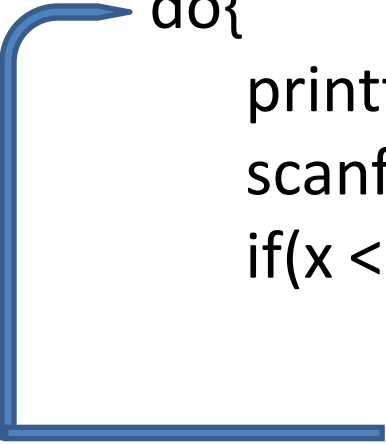
```
main(){
    int i, n;
    scanf("%d", &n);
    for(i=2; i<=ceil(sqrt(n)); i=i+1){
        if(!(n%i)){
            printf("n is composite");
            return;
        }
    }
    printf("n is prime");
}
```

# continue Statement

- It used to bypass the remainder of the current pass through a loop such as **for**, **while**, **do-while**.

## Example:

```
do{
    printf("Print x ");
    scanf("%f", &x);
    if(x < 0){
        printf("ERROR-Negative value for x");
        continue;
    }
}while(x<=100);
```



# goto statement

goto *label*;

*label*: statement

## Example:

```
scanf("%f", &x);
while(x<=100){
    if(x < 0) goto errorcheck;
    scanf("%f", &x);
}
errorcheck: {
    printf("ERROR-Negative value for x");
}
```

# Assignments

A gas company bills its customers according to the following rate schedule:

First	50 cmeters	Rs. 40 (Flat Rate)
Next	300 cmeters	Rs. 1.25 per 10 cmeters
Next	3000 cmeters	Rs. 1.20 per 10 cmeters
Next	5000 cmeters	Rs. 1.10 per 10 cmeters

Above this Rs. 0.80 per 10 cmeters

**Given an input for each customer in the format:**

<customer number, previous meter reading, current meter reading>

**Write a program to output the following:**

<customer number, previous meter reading, current meter reading, gas used, Total Bill>