# C Course :: Fall 2008, Lab Session - II

13 September 2008

Problem 1

**Problem**

Calculate the approximate value of (pi) using a simple c program.

**Strategy**

Generate n random points inside a square of dimension 2x2 centered at (1, 1). Now, among the n points, count the number of points which lie inside the circle centered at (1, 1) and having radius 1.

Now the ratio of should be roughly equal to the ratio of their area i.e. . Where, *r* = radius of the circle and *x* = side of the square.

Use the function: drand48() to generate a random number in [0.0, 1.0). You may have to multiply it by 2 to get a number in [0.0, 2.0). There are a number of other functions for generating random numbers, each having a different functionality, e.g, int rand(), long int lrand48().

For more on drand48(), see the man page ($ man drand48).

Take n (no. of points) to be large for better accuracy.

Structure:

int main() {

}

int isInsideCircle(double x, double y) {

// this functions returns 1 if the point (x, y) lie inside

// the circle centered at (1, 1), returns 0 otherwise.

}

Problem 2

**Problem**

Write a function in C that concatenates two strings. Let the program have the following structure:

int main() {  
 char \*str1 = “some string”; // say length of str1 is len1  
 char \*str2 = “other string”; // length of str2 be len2  
 char str3[len]; // len = len1 + len2 + 1 (why + 1?)

// len can also be computed as len = sizeof(str1) + sizeof(str2) +1

concatenate(str1, str2, str3);  
 printf(“concatenated string is %s”, str3);

}

void concatenate(char \*str1, char\* str2, char \*result) {

// this function uses a for/while loop to copy str1 and str2 into

// result, one after the other.

}

**Things to note:** sizeof(str1) returns the number of bytes in the str1 array. And sizeof() doesn’t count the ‘\0’ at the end of the string while returning its length. So, if char \*str1 = “hello”, sizeof(str1) returns 5