

Programming and Data Structures Lab Section 15

Prof. Soumyajit Dey

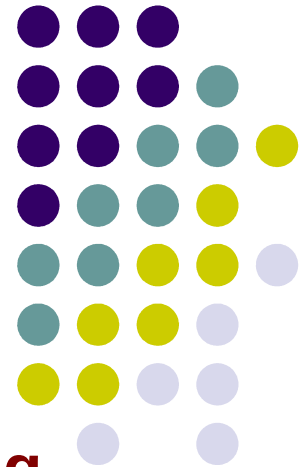
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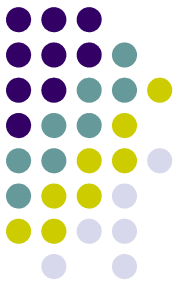
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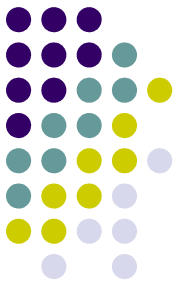
[http://cse.iitkgp.ac.in/~aritrah/course/lab/PDS/
Autumn2018/CS19101_PDS-Lab_Autumn2018.html](http://cse.iitkgp.ac.in/~aritrah/course/lab/PDS/Autumn2018/CS19101_PDS-Lab_Autumn2018.html)



Teaching Assistants

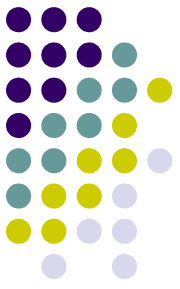


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Rules

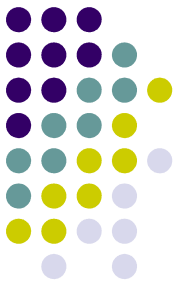
- All assignments to be done in the lab and submitted before the lab concludes
- Any attempts to copy will involve severe penalties
 - **0** for the assignment copied for **BOTH** the person copying and the person copied from
 - Any repeat offense will result in **deregistration** from the course



Marks Distribution

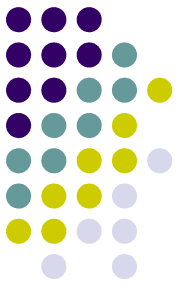
- Lab Test 1 (just before midsem) – 40
- Lab Test 2 (just before endsem) – 40
- 11 Assignment Modules – $11 \times 20 = 220$

- Total Marks = 300
 - Will be scaled down to 100 marks.



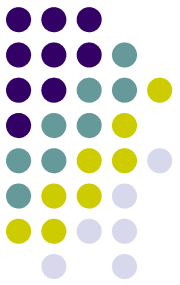
Computing Environment

- Dell Desktop Systems
- Ubuntu operating system
 - linux operating system for your purpose
- Text editor: **gedit**
 - For typing in your C program
- C language compiler: **gcc**
 - For compiling the C program



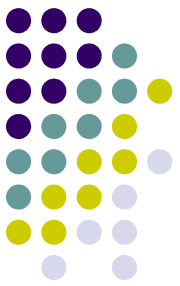
Logging in to the System

- Username: **sec15**
- Password: sec15@123
 - **Change it with your own new password**
 - **Open terminal and type *passwd***
 - **Give old/existing password**
 - **Then give your new password**
 - **Confirm by giving the same again**
- You should see a new screen



Basic Program Execution

- Writing your program
 - Open a text editor (gedit)
 - Open a new file
 - Type your program in the text editor
 - Save it
- Compile and run your program
 - Open a terminal
 - Call gcc to compile and then run



Writing the C Program

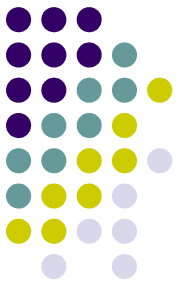
- Type in the following C program exactly as it is in the file, and then save it

```
/* The first C program */  
#include <stdio.h>  
int main()  
{  
    printf("Welcome to IITKGP\n");  
    return 0;  
}
```


Compiling and Running Your C Program



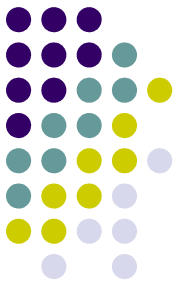
- In the terminal window, at the \$ prompt, type
gcc first.c
- If the compilation is successful, you should see the \$ prompt come back with no errors
- Run the program by typing
./a.out
- You should see **Welcome to IITKGP** printed out



Making a Mistake

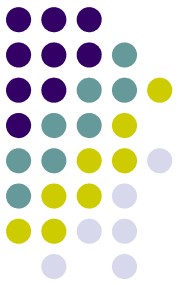
- Remove the **)** (right bracket) after main

```
/* The first C program */  
#include <stdio.h>  
int main(  
{  
    printf("Welcome to IITKGP\n");  
    return 0;  
}
```



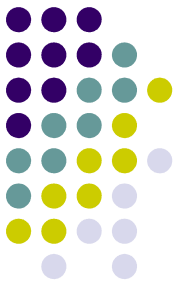
Configuring the Program

- Save the file **again**
- Compile the file **again**
- You will see an error printed out:
`first.c:4 : error: Syntax error`
- Go back and correct the error
- Save the file **again**
- Compile the file **again**
 - Should show no errors this time
- Run the file and verify that **Welcome to IITKGP** is printed



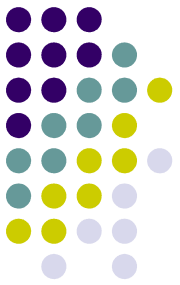
IMPORTANT

- Every time you change something in the file, you must
 - **Save it again**
 - **Compile it again**
- This will generate a new executable **a.out** with the changes



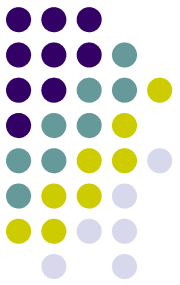
IMPORTANT

- Every program must start with a comment containing
 - Section No.
 - Machine no.
 - Roll No.
 - Name.
 - Assignment No.
 - A one line description of the assignment



Example Header

```
/******  
* Section : 15  
* Machine No. : N  
* Roll No. : 18CS100XY  
* Name : name surname  
* Assignment No : 0  
* Description : first C program  
*****/
```



First C Program

```
/*  
* Section : 15  
* Machine No. : N  
* Roll No. : 18CS100XY  
* Name : name surname  
* Assignment No : 0  
* Description : first C program  
***/
```

```
#include <stdio.h>  
int main( )  
{  
    printf("Welcome to IITKGP\n");  
    return 0;  
}
```



Some Basics

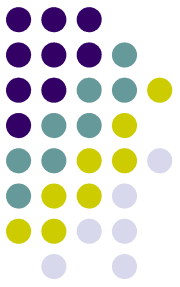
- Your programs will be stored in **files**
- Files are stored in **directories** (**folders** in windows)
- Directories will contain other **subdirectories** and **files**
- You may create a separate subdirectory for each of your assignments so that you can find them easily
 - **But this is not a requirement for this lab, so if you want, just keep all your files in the same directory**

Some Useful Linux Commands



- **pwd** – shows the current directory you are in
- **ls** – shows the contents (Files and subdirectories) of the current directory
- **mkdir X** – creates a subdirectory named **X** under the current directory
- **cd X** – changes the current directory to the directory named **X** under it

Creating a Practice Directory



- On the \$ prompt, type
mkdir practice
- Type **ls** to verify that the new directory is created
- Change to the new directory: type
cd practice
- Type **pwd** to verify that you are in the new directory
- We will now use this directory to store our practice files