a) A boat building company makes two kinds of boat: an **Arihant**, which takes a month to build and a **Chakra** which takes two months to build. The company only has enough space to build one boat at a time but it does have plenty of customers waiting for a boat to be built. Suppose the area where the boats are built has to be closed for maintenance soon:

- if it is closed after one more months work, the builders can only build one boat – an Arihant - before then. Let's write this plan as **A**;
- if it is to be closed after 2 months work, it can EITHER build 2 Arihants (**AA**) or else build one Chakra (**C**), so there are two plans to choose from;
- if it closed in three months time, it could make 3 Arihants (AAA) or a Chakra followed by a Arihant (**CA**) or an Arihant and then a Chakra (**AC**); so there are three choices of plan.
- What choices are there if it closed after 4 months?
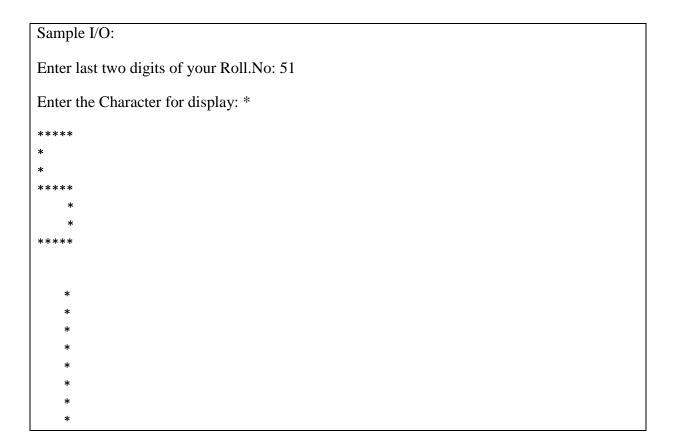- ... or after 5 months ?
- ... or after n months ?

As a programmer can you help the boat building company to find the number of choices by writing a C program (assign3a.c)?

Sample I/O:

Enter the month after which the area is to be closed: 4

There are 5 choices of plan.

b) Using seven segment display, you can write down any digit from 0 to 9 using at most seven segments. Write a C program (assign3b.c) that will read your last two digits of your Roll.No and display seven segment display those two numbers separately. More credit will be given for using less number of *printf* statements.

Sample I/O:

Enter last two digits of your Roll.No: 51

Enter the Character for display: *

```
*****
*
*
*****
     *
     *
*****


     *
     *
     *
     *
     *
     *
     *
     *
```

Program Formatting Instruction: Students are advised to write their programs with proper care. A program must have a header block consisting of programmer's name and rollno, along with date of creation. In the header, also include the objective of the program in one line. The program should be properly indented and it is expected that you will use meaningful variable names. For each functional block provide a short and relevant comment.

Submission Process: Submit your assignment (make sure your assignment can be executed in using gcc compiler) using the link- http://172.16.1.3/~samrat/CS112/submission/

Login using your rollno (ex: 1601CS01) and password. Once you login, change the password immediately. It is your responsibility to set a strong password that is not guessable by others. Upload the assignments using the specified filenames only.

After the due date (mentioned at top), the uploading of files may be allowed for few more time but it will be treated as late submission. So ensure that you submit the assignment on time. There will be penalty if you are found to take any unfair means during the lab hours and during the assignment submission process. ***Copying program from any other source and allowing others to copy your program, both will be penalized equally.***