Exception Handling

- Exception Handling Basics
- Exception Handling mechanism
- Throwing Exception
- Catching exception
- Rethrowing Exception
- Exception Specification

Exception Handling

- Exception are the errors that occur at run time and can stop the working of the program abruptly.
- They can occur in various situations- one such condition when the number is divided by 0.
- For handling such exceptions we have an error handling mechanism called as exception handling.

Objective

Main objective is to provide a way to detect and report the exception condition so that necessary action can be taken without troubling user

Exception handling mechanism

- when exception occurs the portion of program that detects the exception can inform that exception have occurred by throwing it.
- When we throw an exception, program control immidiately stops the step by step execution of code and jumps to exception handler.
- Exception handler catches the exception and process it without troubling user
- When there is no exception handler,program terminates abruptly.

3 constructs used

- Try, Catch, Throw are 3 constructs used for implementing exception handling
- We need to create try and catch block to handle such an exception.
- Try Block: we define the statement that needs to be tested for exception.if exception occurs we use throw statement to invoke exception handler.

Exception handler

- Exception handler is the catch block which catches the exception and process it.
- Syntax:

```
try
{// testing condition
Throw excp;
}
catch(datatype arg)
{
//code for handling exception
}
```

Try-catch block

- the statements in try block can cause exception at run time. On detecting exceptions it is thrown using throw statement in try block.
- Throw keyword is only way to throw an exception and excp represents type of value that can be thrown
- Catch block is an exception handler. Block starts with catch keyword.
- Catch header specifies in paranthesis an exception parameter arg along with datatype

Try-Catch Block

- If type of value(excp) matches with datatype of arg, cath block is executed for processing an exception. Otherwise program will terminate abnormally.
- If there is no exception, Program skips the catch block and continues with next statement

Rethrow an exception

- Catch block can completely handle all the exception, it is possible that catch block may not be able to handle exception completely. In that case catch block that recieves an exception, passes it to another catch block by rethrowing the exception.
- Rethrowing an exception can only appear in catch block

Exception Specification

- There is a list of exceptions that function can throw. This specification is known as exception specification or throw list.
- It ensures that function will not throw other than listed exceptions in exception specification.
- Syntax:

```
Data_type function_name(para_list) throw(type_list)
{
//function_body
}
```