Lecture Outline:
In this lecture we will examine types of specifications common to the computer industry. Then we will examine the importance and main features of analysis reports. We will also see that terms and conventions often differ from company to company, but the general framework is similar.

Introduction:
For everyone involved in the design phase of the computer industry – hardware engineers, software engineers, technicians, and programmers – specifications are the most important document to be read or written. The situation is even worse when work has to be undone or redone because of bad specs. Specifications can be categorized into four types:
- Requirement specs
- Functional specs
- Design specs
- Test specs

Requirements specification:
The result of market research is requirements specifications. In it, the marketing people attempt to specify what the market is looking for, what people or companies who use computers would find useful and would like to have.

Product definition
This is as accurate a description as can be written by marketing about the desired product. It should answer the question: “What is it?”

Functions list
This is a description of what the desired product should be capable of doing. It leads to the next type of specification.

Cost
This is a ballpark estimate as to what the desired product should cost to be competitive in the marketplace. We then move onto the functional specification.

Functional Specification:
These specs will form the basis for the highly precise design specifications. Hardware functional specifications as a rule contain the following:
- Functional description
- Configuration specification
- Electrical description
- Physical characteristics
- Standards
- Environmental requirements
- Diagnostic requirements
- Power requirements
- Cost target
- Maintenance cost target
- Resource requirements
- Documentation
- Risks
• Assumptions
• Unresolved issues
• Glossary

Software functional specs usually contain the following:

• Functional description of the product
• Product features Dependencies
• Physical characteristics
• Risks
• Assumptions
• Cost target
• Maintenance
• Resources
• Documentation
• Glossary

**Design Specification:**
Design specifications are later used as the basis for test plans and user documentation. Hardware design specifications generally contain some version of the following components:

• Introduction
• Applicable documents
• Functional description
• External interfaces
• Detailed design
• Programming considerations
• Power requirements
• Reliability
• Diagnostic considerations
• Standards
• Environmental requirements
• Glossary

Software design specifications should contain the following:

• Introduction
• Application documents
• Functional description
• General design
• Memory requirements, performance, and restrictions:
• Product requirements
• Test strategy
• Deviations from functional specifications
• Interfaces
• Glossary

**Test Specification:**

• Introduction
  • Applicable documents: these documents might describe test procedures on similar products designed and developed in the past.
  • Description of unit to be tested.
  • Testing method: this section provides a step-by-step description of the testing
Analysis Reports:
The important thing to remember is that no report format is perfect. Company documentation standards attempt to resolve the issue by prescribing a format into which all analysis reports are poured. Report design should be flexible enough to meet a variety of writer purposes and audience needs.

Title page:
A title page should be designed with visual order in mind. It should be balanced from top to bottom and from left to right. It should provide enough information for readers to be able to tell what the context of the report is and what the report is about.

Abstracts:
Abstracts are condensation of entire reports, focusing on the main issues: what was done, what was found out, and its significance. Abstracts are self-sufficient. The procedure for many companies is to take the abstract from the analysis report, copy it a number of times, circulate it to readers, and allow readers to order the full report if they feel like they need the information.

Table of contents:
The table of contents provides an outline of analysis reports for readers who do not wish to read the entire report or flip through it looking for the section which contains what they are looking for. It should be made up of headings and subheadings of the report, word-for-word, with the accompanying page numbers.

List of symbols:
This is an optional addition to the front matter of an analysis report. Include it if you think the readers will need to have symbols defined. The same thing applies to the inclusion of a glossary.

Introduction:
This is the place for the three-part purpose statement introduction. It will orient readers to the main issue of the report, to the technical issues or specifics which are important to the report, and to what the report is intended to accomplish.

Discussion:
The discussion contains an analysis of the technical issues important to the report. It supports the main issue to the report by providing evidence and explanations. It should be subdivided into topics, each with a subheading.

Conclusion:
This section presents the results of the analysis, the evaluation of what was presented in the discussion. Sometimes listing the conclusion is a good way to organize them. It calls attention to the conclusion individually, but still enables writers to explain them as is necessary.

Recommendations:
Recommendations are optional, not all analysis reports have them. Those reports that do have recommendations, tell the readers what to do with the information provided in the report.

Appendix:
Usually this would include derivations of equations, tables of raw data, sample equations, and so forth. But the only way to be certain that what is placed in the appendix belongs there is to assess it within the context of audience needs.