Chapter 13
Programming and Languages

Lecture Guide

- **Learning Objectives**
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Chapter Outline

- **Programs and Programming**
  - **program**
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  - **SDLC**
    - *Program specification*
    - *Program design*
    - *Program code*
    - *Program test*
    - *Program documentation*
    - *Program maintenance*
    - **software engineers programmers**
- **Step 1: Program Specification**
  - **program definition program analysis,**
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- **Step 2: Program Design**
  - **Pseudocode**
  - **Flowcharts**
  - **Logic structures**
- **Step 3: Program Code**
  - **coding**
    - **structured programs**
    - **Code**
    - **programming language**

- **Step 4: Program Test**
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    - **Desk checking (code review)**
    - **Manually testing with sample data**
    - **Attempt at translation**
    - **Testing sample data on the computer**
    - **Testing by a select group of potential users -**
- **Step 5: Program Documentation**
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- **Step 6: Program Maintenance**
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    - **Operations -**
    - **patches**

      software updates

- **Changing needs -**
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  - **Agile development**
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- **CASE and OOP**
  - **CASE -**
  - **Object - Oriented Programming (OOP) –**
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    - **object**
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- **Generations of Programming Languages**
  - **Levels generations**
  - **lower level**
  - **higher level**
  - **First generation – Machine language**
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  - **Second generation – Assembly languages**
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  - **Third Generation – High-level procedural languages**
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    - **Compiler -**
    - **Interpreter**

- **Fourth generation – Task-Oriented Languages**
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    - **Query languages**
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    - **Application generators program coder**
- **Fifth generation – Problem and Constraint Languages**
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  - **natural languages**
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- **Careers in IT**
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- **A Look to the Future**
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Teaching Tips

- **Programs and Programming**
- **Program Specification**
- **Program Design**
- **Program Code**
- **Program Test**
    - **Desk checking**
    - **Manually testing with sample data**
    - **Attempt at translation**
    - **Testing sample data on the computer**

        - **Testing by a select group of potential users -**

- **Program Documentation**
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- **Program Maintenance**
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- **CASE and OOP**
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- **Generations of Programming Languages**
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Key Terms

Key Term	Definition

Answers to End-of-Chapter Materials
Chapter 13

Num	Multiple Choice Answers (Book)	Matching Answers (Book)	Multiple Choice Answers (www.mhhe.com/ce2015 Only)	Matching Answers (www.mhhe.com/ce2015 Only)

Open Ended Questions:

1. **Identify and discuss each of the six steps of programming.**
    - **Program specification**
    - **Program design**
    - **Program code**
    - **Program test**
    - **Program documentation**
    - **Program maintenance**

2. **Describe CASE tools and OOP. How does CASE assist programmers?**
    - **Computer-aided software engineering tools (CASE) -**
    - **Object-oriented programming (OOP) -**
        - **-**

3. **What is meant by "generation" in reference to programming languages? What is the difference between low-level and high-level languages?**
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4. **What is the difference between a compiler and an interpreter?**
    - **Compiler -**
    - **Interpreter**

5. **What are logic structures? Describe the differences between the three types.**

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