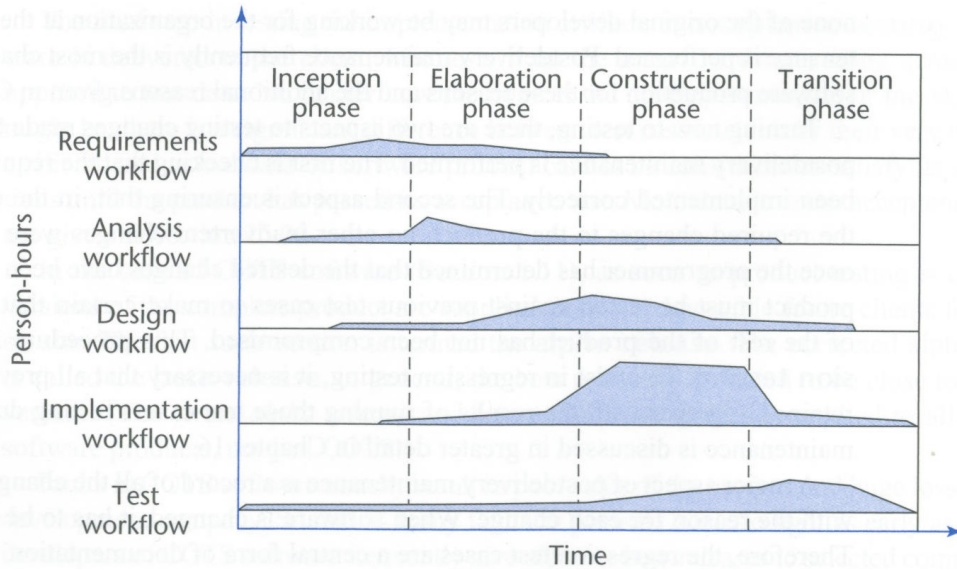


CS 430 – Fall 2023  
**Final Exam**  
**Reference Sheet**

# 1 The Unified Process

**FIGURE 3.1**

The core workflows and the phases of the Unified Process.



# 2 CASE Tools

The following list of CASE tools is summarized in Figure 5.14 in the text.

Build tool	Coding tool
Configuration-control tool	Consistency checker
Data dictionary	E-mail
Interface checker	Online documentation
Operating system front end	Pretty printer
Report generator	Screen generator
Source-level debugger	Spreadsheet
Structure editor	Version-control tool
Word-processor	World Wide Web browser

### 3 Function Points

**Figure 9.3 - Table of Function Point Values**

Component	Level of Complexity		
	Simple	Average	Complex
Input item	3	4	6
Output item	4	5	7
Inquiry	3	4	6
Master file	7	10	15
Interface	5	7	10

**Figure 9.4 - Technical factors for function point computation**

Factor	Name
1	Data communication
2	Distributed data processing
3	Performance criteria
4	Heavily utilized hardware
5	High transaction rates
6	Online data entry
7	End-user efficiency
8	Online updating
9	Complex computations
10	Reusability
11	Ease of installation
12	Ease of operation
13	Portability
14	Maintainability

#### Degree of Influence (DI)

$DI =$  sum of counts of technical factors in Figure 9.4

#### Technical Complexity Factor (TCF)

$$TCF = 0.65 + (0.01)DI$$

#### Function Points (FP)

$$FP = (UFP)(TCF)$$

# 4 Intermediate COCOMO

## Nominal Effort

$$\text{nominal effort} = \text{multiplier}(KDSI)^{\text{exponent}}, \text{in person-months}$$

Figure 9.6 - Intermediate COCOMO software development effort multipliers

Cost Drivers	Rating					
	Very Low	Low	Nominal	High	Very High	Extra High
<b>Product Attributes</b>						
-Required software reliability	0.75	0.88	1.00	1.15	1.40	
-Database size		0.94	1.00	1.08	1.16	
-Product complexity	0.70	0.85	1.00	1.15	1.30	1.65
<b>Computer Attributes</b>						
-Execution time constraint			1.00	1.11	1.30	1.66
-Main storage constraint			1.00	1.06	1.21	1.56
-Virtual machine volatility		0.87	1.00	1.15	1.30	
-Computer turnaround time		0.87	1.00	1.07	1.15	
<b>Personnel Attributes</b>						
-Analyst capabilities	1.46	1.19	1.00	0.86	0.71	
-Applications experience	1.29	1.13	1.00	0.91	0.82	
-Programmer capability	1.42	1.17	1.00	0.86	0.70	
-Virtual machine experience	1.21	1.10	1.00	0.90		
-Programming language experience	1.14	1.07	1.00	0.95		
<b>Project Attributes</b>						
-Use of modern programming practices	1.24	1.10	1.00	0.91	0.82	
-Use of software tools	1.24	1.10	1.00	0.91	0.83	
-Required development schedule	1.23	1.08	1.00	1.04	1.10	