The

CKPMpp

Pre-Processor

Compiler Construction Course

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Content

1.   Introduction

The CKPMpp pre-processor transforms source files into compilation units similar to [1].

2.   EBNF of the Pre-Processor

```
File                  = { Chunk }.
Chunk                 = NewLine { WhiteSpace } PreProcLine { WhiteSpace }
                             { Comment {WhiteSpace } } NewLine.
                        | Comment
                        | AllCharacter.
Comment               = "/*" { AllCharacter } "*/".
PreProcLine           = "#" { WhiteSpace } ( include-Statement | if-Statement | ifdef-Statement | else-Statement
                        | elif-Statement | endif-Statement | define-Statement | defined-Statement)
include-Statement     = "include" Separator ( "\"" path "\"" | "<" path ">" ).
if-Statement          = "if" Separator LogicalOrExpression.
ifdef-Statement       = "ifdef" Separator LogicalOrExpression.
defined-Statement     = "defined" Separator MacroIdentifier
else-Statement        = "else".
elif-Statement        = "elif" Separator LogicalOrExpression.
endif-Statement       = "endif".
define-Statement      = "define" Separator MacroIdentifier Separator SimpleExpression
LogicalOrExpression   = LogicalAndExpression { "||" LogicalAndExpression }.
LogicalAndExpression  = CompExpression { "&&" CompExpression }.
CompExpression        = SimpleExpression [ ( "==" | "!=" | ">=" | ">" | "<" | "=<" ) SimpleExpression ]
                        | defined-Statement.
SimpleExpression      = [ UnaryOperator ] Term { ( "+" | "-" | "|" | "<<" | ">>" ) Term }.
UnaryOperator         = ( "+" | "-" )
Term                  = Factor { ( "*" | "/" | "%" | "!" ) Factor }.
Factor                = "(" LogicalOrExpression ")" | MacroIdentifier | Constant.
Constant              = Number | QuotedString | String
QuotedString          = "\"" ( "\\" AllCharacter | NotQuoteCharacter ) "\""

Separator             = WhiteSpace { WhiteSpace }
String                = Character { Character }.
NotQuoteCharacter     = ' '..'!' | '#'..'~'
AllCharacter          = NewLine | WhiteSpace | Character
Character             = Digit | Letter | SpecialCharacter.
Number                = Digit { Digit }.
Digit                 = '0'..'9'.
NewLine               = '\r' | '\n' | '\f'.
WhiteSpace            = '\t' | ' '.
Letter                = 'A'..'Z' | 'a'..'z'.
EscapeCharacter       = '\\'.
SingleQuote           = '\''.
DoubleQuote           = '"'.
SpecialCharacter      = '!' | '#' | '$' | '%' | '&' | '(' | ')' | '*' | '+' | ',' | '-' | '.' | '/' | ':' | ';' | '<' | '=' | '>' | '?'
                        | '[' | '\' | ']' | '^' | '_' | '`' | '{' | '|' | '}' | '~'
```

3.   References

[1]   Free Software Foundation (2005) *The C Preprocessor*. http://gcc.gnu.org/onlinedocs/cpp/ (23 April 2006)