Converting to Chomsky Normal Form

Michael Cooper – Foundations of Computation Coursework

Grammar to be converted to Chomsky Normal form.

```
E  → E+T | T,
T  → T*F,
F  → (E),
F  → x
```

Step 1 – Eliminating the start symbol.

```
S0 → E+T | T,
E  → E+T | T,
T  → T*F,
F  → (E),
F  → x
```

Step 2 – Eliminating rules where a terminal is not on its own.

```
S0 → EPT | T,
E  → EPT | T,
T  → TMF,
F  → LER,
F  → x
P  → +
M  → *
L  → (
R  → )
```

Step 3 – Eliminating rules with more than 2 non-terminals.

```
S0 → EA | T,
E  → EB | T,
T  → TB,
F  → LC,
A  → PT
B  → MF
C  → ER
F  → x
P  → +
M  → *
L  → (
R  → )
```

Step 5 – Remove all rules with non-terminal to empty: N/A as no rules of type.

Step 4 – Eliminating all rules with a single non-terminal.

```
S0 → EA | TB | LC | x
E  → EA | TB | LC | x
T  →      TB | LC | x
F  →           LC | x
A  → PT
B  → MF
C  → ER
P  → +
M  → *
L  → (
R  → )
```