

There are times, when a long program will not fit in the memory of the control system. For very long programs, the only way is to run them externally, using DNC software. However, smaller programs can be made significantly shorter by removing unnecessary words and characters, such as leading zeros, comments, etc.

In this project, the following program is correct, but can be significantly shortened. Without changing any block order, remove all unnecessary program entries by crossing once each character or word. Although such a change will not guarantee that the program can be loaded in to the memory, at least it provides means towards that goal.

Make sure that the integrity and safety of the program is not compromised

➔ Program to be shortened:

```
(BASIC TEST.NC)
(FANUC CNC SYSTEM)

(MATERIAL IS 1020 STEEL CUT ON A LASER MACHINE)
(STOCK APPROXIMATELY 1-1.5 MM ALL AROUND)
(XOYO AT THE LOWER LEFT CORNER)
(Z0 AT TOP OF PART)

(T01 - 16 DIA CARBIDE CENTER CUTTING END MILL)
(T02 - 12 DIA CARBIDE CENTER END MILL)
(T03 - 10 DIA SPOT DRILL)
(T04 - 4.2 DIA TAP DRILL)
(T05 - M5 X 0.8 TAP)

(T01 - 16 DIA CARBIDE CENTER CUTTING END MILL)
N1 G21
N2 G17 G40 G80 T01
N3 M06
N4 G90 G54 G00 X50.0 Y42.0 S1400 M03 T02
N5 G43 Z25.0 H01 M08
N6 G01 Z2.5 F500.0
N7 Z-4.0 F100.0
N8 G41 X42.0 Y38.0 D01 F150.0
N9 G03 X50.0 Y30.0 I8.0 J0
N10 J12.0
N11 X58.0 Y38.0 I0 J8.0
N12 G01 G40 X50.0 Y42.0
N13 G00 Z2.5 M09
N14 G28 Z2.5 M05
N15 M01

(T02 - 12 DIA CARBIDE CENTER END MILL)
N16 T02
N17 M06
N18 G90 G54 G00 X-10.0 Y-10.0 S1850 M03 T03
N19 G43 Z25.0 H02 M08
N20 G01 Z-12.0 F500.0
N21 G41 X0 Y-3.0 D02 F250.0
N22 Y52.0 F200.0
N23 X29.856 Y60.0
N24 X50.0
N25 G02 Y24.0 I0 J-18.0
N26 G01 X32.0
N27 G03 X25.0 Y17.0 I0 J-7.0
N28 G01 Y3.0
```

```
N29 G02 X22.0 Y0 I-3.0 J0
N30 G01 X-3.0
N31 G00 G40 X-10.0 Y-10.0
N32 Z2.5 M09
N33 G28 Z2.5 M05
N34 M01
```

```
(T03 - 10 DIA SPOT DRILL)
```

```
N35 T03
N36 M06
N37 G90 G54 G00 X10.0 Y10.0 S1200 M03 T04
N38 G43 Z25.0 H03 M08
N39 G99 G82 R2.0 Z-2.8 P200 F125.0
N40 G91 Y8.0 L4
N41 G90 G80 Z25.0 M09
N42 G28 Z25.0 M05
N43 M01
```

```
(T04 - 4.2 DIA TAP DRILL)
```

```
N44 T04
N45 M06
N46 G90 G54 G00 X10.0 Y42.0 S1350 M03 T05
N47 G43 Z25.0 H04 M08
N48 G99 G81 R2.0 Z-12.76 F150.0
N49 G91 Y-8.0 L4
N50 G90 G80 Z25.0 M09
N51 G28 Z25.0 M05
N52 M01
```

```
(T05 - M5 X 0.8 TAP)
```

```
N53 T03
N54 M06
N55 G90 G54 G00 X10.0 Y10.0 S800 M03 T01
N56 G43 Z25.0 H05 M08
N57 G99 G84 R5.0 Z-12.0 F640.0
N58 G91 Y8.0 L4
N59 G90 G80 Z25.0 M09
N60 G28 Z25.0 M05
N61 G28 X10.0 Y42.0
N62 M30
%
```