

Program Structure Q+A

➔ Answers to questions:

1. The structure of a CNC program is a series of sequential instructions sent to the CNC system, for the purpose of machining a part according to engineering specifications

2. The smallest element of a CNC program is called a **character**

3. X+5.3

4. Follow the correct format written after each word entry:

G54	->	ok
P0.2	->	P200
J120.0	->	ok
L20	->	ok
x45.0	->	X45.0
M03	->	ok
Z15000	->	ok - be careful
/N120	->	ok
Y 0.5	->	Y0.5
H21	->	ok
Z-1,5	->	Z-0.5
-K0.75	->	K-0.75
s3000	->	S3000
X+4.5	->	ok but use X4.5
XY100.0	->	X100.0 or Y100.0
M3	->	ok - or M03
F(10.0)	->	F10.0
O1234	->	ok
T6	->	ok - T6 or T06
1.75Y	->	Y1.75

5. Alpha-numerical input means the program data format can use letters of the alphabet, all ten digits and a selection of special symbols, such as a minus sign, decimal point, slash, etc.

6. A written percent sign (%) is the 'end of transmission' symbol, used for communications between an external computer and the CNC system

7. A program block is a set of instructions that have to be executed (processed) before the next set of instructions is issued

8. Parentheses are used for comments in the CNC program. Comments or messages can be sent to the CNC machine with the program, providing they are enclosed in parentheses - nesting is not allowed

9. The following sample shows some common entries in the program header.
Keep in mind that headers and other program comments do take memory space.

```
(FILE NAME ..... BRACKET.NC)
(   DATE ..... 04-MAY-08)
(PROGRAMMER ..... PETER SMID)
(MACHINE ..... MATSUURA VMC)
(CONTROL ..... FANUC 18-M)
(XY ZERO ..... CENTER OF HOLE)
(Z ZERO ..... TOP OF PART)
(MATERIAL ..... STAINLESS STEEL)
(JOB ID ..... CGR-94512-F)
(VERIFIED ..... NO)
```

10. These keys are not used at all, because they are not part of the plain ASCII text required by CNC programs

11. A word in a CNC program is the smallest unit of instruction to the control system.
For example, **F250.0** instructs the control system to move the appropriate tool at 250 mm/min feedrate

12. **N17 G90 G54 G00 X12.0 Y56.0 S1200 M03**

13. + - . () / : %

14. Character: (cannot stand on its own - must be part of a word)

R X J F - / 7 0 . G ...

Word: **G01 M03 M06 H12 P200 J0.5 ...**

Block(s): **N15 G01 X12.0 Y17.75 F12.0**
 N16 G00 Z0.1 M09
 N17 G28 Z0.1 M05
 ...

15. The correct answer is 'b/' - every control will accept program written in capital letters,
but not every control will accept program using low case or mixed case.