

# Data types

Tuesday, 18 February 2020 3:06 pm

A **byte** is eight bits, a **word** is 2 **bytes** (16 bits), a doubleword is 4 **bytes** (32 bits), and a quadword is 8 **bytes** (64 bits).

2 bytes

```
gdb-peda$ x/2bx &var1
0x402022:      0x11      0x22
gdb-peda$
```

Word - half word in GDB

```
gdb-peda$ x/hx &var2
0x402024:      0x3344
gdb-peda$
```

Double Word - full word in GDB

```
gdb-peda$ x/wx 0x000000000000402026
0x402026:      0xaabbccdd
gdb-peda$ _
```

Quad Word - giant word in GDB

```
gdb-peda$ x/gx 0x00000000000040202a
0x40202a:      0xaabbccdd11223344
gdb-peda$ _
```

1 giant word = 8 byte

128 byte of A

16 \* 8 = 128

17 \* 8 = 136

```
gdb-peda$ x/17gx 0x000000000000402032
0x402032:      0x4141414141414141      0x4141414141414141
0x402042:      0x4141414141414141      0x4141414141414141
0x402052:      0x4141414141414141      0x4141414141414141
0x402062:      0x4141414141414141      0x4141414141414141
0x402072:      0x4141414141414141      0x4141414141414141
0x402082:      0x4141414141414141      0x4141414141414141
0x402092:      0x4141414141414141      0x4141414141414141
0x4020a2:      0x4141414141414141      0x4141414141414141
0x4020b2:      0x0000000000000000
gdb-peda$
```

Alternative way of viewing

```

gdb-peda$ x/128bx &repeat_buffer
0x402032:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x40203a:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x402042:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x40204a:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x402052:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x40205a:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x402062:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x40206a:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x402072:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x40207a:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x402082:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x40208a:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x402092:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x40209a:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x4020a2:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
0x4020aa:      0x41      0x41      0x41      0x41      0x41      0x41      0x41      0x41
gdb-peda$

```

64byte reserved uninitialized data

8 \* 8 = 64

9 \* 8 = 72

```

gdb-peda$ x/9gx 0x0000000000004020b4
0x4020b4:      0x0000000000000000      0x0000000000000000
0x4020c4:      0x0000000000000000      0x0000000000000000
0x4020d4:      0x0000000000000000      0x0000000000000000
0x4020e4:      0x0000000000000000      0x0000000000000000
0x4020f4:      0x0000000000000000
gdb-peda$

```

Alternative way of viewing

```

gdb-peda$ x/64bx &buffer
0x4020b4:      0x00      0x00      0x00      0x00      0x00      0x00      0x00      0x00
0x4020bc:      0x00      0x00      0x00      0x00      0x00      0x00      0x00      0x00
0x4020c4:      0x00      0x00      0x00      0x00      0x00      0x00      0x00      0x00
0x4020cc:      0x00      0x00      0x00      0x00      0x00      0x00      0x00      0x00
0x4020d4:      0x00      0x00      0x00      0x00      0x00      0x00      0x00      0x00
0x4020dc:      0x00      0x00      0x00      0x00      0x00      0x00      0x00      0x00
0x4020e4:      0x00      0x00      0x00      0x00      0x00      0x00      0x00      0x00
0x4020ec:      0x00      0x00      0x00      0x00      0x00      0x00      0x00      0x00
gdb-peda$

```