

Tarea 4

1. Residuo Mínimo

• $r \bmod 10$

$$\ast 17 \bmod 10$$

$$1 < 17/10 < 2$$

$$r = 17 - (1)10$$

$$r = 7$$

$$\ast 50 \bmod 10$$

$$5 \leq 50/10 < 6$$

$$r = 50 - (5)10$$

$$r = 0$$

$$\ast 6 \bmod 10$$

$$0 < 6/10 < 1$$

$$r = 6 - (0)10$$

$$r = 6$$

$$\ast -1 \bmod 10$$

$$-1 < -1/10 < 0$$

$$r = -1 - (-1)10$$

$$r = 9$$

$$\ast -38 \bmod 10$$

$$-4 < -38/10 < -3$$

$$r = -38 - (-4)10$$

$$r = 2$$

• $r \bmod 3$

$$\ast 17 \bmod 3$$

$$5 \leq 17/3 < 6$$

$$r = 17 - (5)3$$

$$r = 2$$

$$\ast 9 \bmod 3$$

$$3 \leq 9/3 < 4$$

$$r = 9 - (3)(3)$$

$$r = 0$$

$$\ast -2 \bmod 3$$

$$-1 \leq -2/3 < 0$$

$$r = -2 - (-1)3$$

$$r = 1$$

$$\ast -10 \bmod 3$$

$$-4 < -10/3 < -3$$

$$r = -10 - (-4)3$$

$$r = 2$$

$$\ast 3 \bmod 3$$

$$1 \leq 3/3 < 2$$

$$r = 3 - (1)3$$

$$r = 0$$

• ¿Qué día sera en 1000 días, siendo hoy Jueves?

$n = 7$, días de la semana

$$d = 1000 + 4 = 1004$$

↓

Jueves

$$1004 \bmod 7 \equiv (700 + 280 + 24) \% 7$$

$$\equiv 24 \bmod 7$$

$$r = 3 \quad (3 \text{ día de la semana})$$

Sera Miércoles

2. Arithmetica Modular

• Hallar el mínimo residuo $\text{mod}(6)$

$$\begin{aligned} &+ 7 + 3 \text{ mod } 6 \\ &10 \text{ mod } 6 \end{aligned}$$

$$r = 4$$

$$\begin{aligned} &* 7 - 3 \text{ mod } 6 \\ &4 \text{ mod } 6 \end{aligned}$$

$$r = 4$$

$$\begin{aligned} &* 23 - 24 \text{ mod } 6 \\ &-1 \text{ mod } 6 \end{aligned}$$

$$r = 5$$

$$\begin{aligned} &* 67 + 68 \text{ mod } 6 \\ &(67 + 68) \equiv (7 + 8) \text{ mod } 6 \\ &\equiv 15 \text{ mod } 6 \end{aligned}$$

$$r = 3$$

$$\begin{aligned} &* 601 - 6001 \text{ mod } 6 \\ &\equiv 1 - 1 \text{ mod } 6 \\ &\equiv 0 \text{ mod } 6 \end{aligned}$$

$$r = 0$$

$$\begin{aligned} &* -3 - 14 \text{ mod } 6 \\ &-22 \text{ mod } 6 \end{aligned}$$

$$r = 2$$

• $\text{mod } (10)$

$$\begin{aligned} * & 6+4 \text{ mod } 10 \\ & 10 \text{ mod } 10 \end{aligned}$$

$$r = 0$$

$$\begin{aligned} * & -21 - 17 \text{ mod } 10 \\ & \equiv 4+3 \text{ mod } 10 \\ & \equiv 12 \text{ mod } 10 \end{aligned}$$

$$r = 2$$

$$\begin{aligned} * & 14 - 7 \text{ mod } 10 \\ & \equiv 7 \text{ mod } 10 \end{aligned}$$

$$r = 7$$

$$\begin{aligned} * & 101 + 11 + 1 \text{ mod } 10 \\ & \equiv 1+1+1 \text{ mod } 10 \\ & \equiv 3 \text{ mod } 10 \end{aligned}$$

$$r = 3$$

$$\begin{aligned} * & 13 - 15 \text{ mod } 10 \\ & \equiv 3 - 5 \text{ mod } 10 \\ & \equiv -2 \text{ mod } 10 \end{aligned}$$

$$r = 8$$

$$\begin{aligned} * & 101 - 11 - 1 \text{ mod } 10 \\ & \equiv 1-1-1 \text{ mod } 10 \\ & \equiv -1 \text{ mod } 10 \end{aligned}$$

$$r = 9$$