Powers modulo m

Some comments on the following tables:

- All entries are modulo m.
- Once the pattern becomes apparent, the line of the table is ended. For example, once a "0" appears, we know that the rest of the line will be all zeros. Once a "1" appears, we know that the line will repeat itself. More generally, once any number appears for a second time, we know the line will repeat itself starting at that point.
- The tables go through a^{12} because that's as high as we needed to go to find the patterns for these moduli.

m	a	a^2	a^3	a^4	a^5	a^6	a^7	a^8	a^9	a^{10}	a^{11}	a^{12}
3	1											
	2	1										
4	1											
	2	0										
	3	1										
5	1											
	2	4	3	1								
	3	4	2	1								
	4	1										
6	1											
	2	4	2									
	3	3										
	4	4										
	5	1										
7	1											
	2	4	1									
	3	2	6	4	5	1						
	4	2	1									
	5	4	6	2	3	1						
	6	1										
8	1											
	2	4	0									
	3	1										
	4	0										
	5	1										
	6	4	0									
	7	1										
9	1											
	2	4	8	7	5	1						
	3	0										
	4	7	1									
	5	7	8	4	2	1						
	6	0										
	7	4	1									
	8	1										

m	a	a^2	a^3	a^4	a^5	a^6	a^7	a^8	a^9	a^{10}	a^{11}	a^{12}
10	1											
	2	4	8	6	2							
	3	9	7	1								
	4	6	4									
	5	5										
	6	6										
	7	9	3	1								
	8	4	2	6	8							
	9	1										
11	1											
	2	4	8	5	10	9	7	3	6	1		
	3	9	5	4	1							
	4	5	9	3	1							
	5	3	4	9	1							
	6	3	7	9	10	5	8	4	2	1		
	7	5	2	3	10	4	6	9	8	1		
	8	9	6	4	10	3	2	5	7	1		
	9	4	3	5	1							
	10	1										
12	1											
	2	4	8	4								
	3	9	3									
	4	4										
	5	1										
	6	0										
	7	1										
	8	4	8									
	9	9										
	10	4	4									
	11	1										
13	1											
	2	4	8	3	6	12	11	9	5	10	7	1
	3	9	1									
	4	3	12	9	10	1						
	5	12	8	1								
	6	10	8	9	2	12	7	3	5	4	11	1
	7	10	5	9	11	12	6	3	8	4	2	1
	8	12	5	1								
	9	3	1									
	10	9	12	3	4	1						
	11	4	5	3	7	12	2	9	8	10	6	1
	12	1										

m	a	a^2	a^3	a^4	a^5	a^6	a^7	a^8	a^9	a^{10}	a^{11}	a^{12}
14	1											
	2	4	8	2								
	3	9	13	11	5	1						
	4	2	8	4								
	5	11	13	9	3	1						
	6	8	6									
	7	7										
	8	8										
	9	11	1									
	10	2	6	4	12	8	10					
	11	9	1									
	12	4	6	2	10	8	12					
	13	1										
15	1											
	2	4	8	1								
	3	9	12	6	3							
	4	1										
	5	10	5									
	6	6										
	7	4	13	1								
	8	4	2	1								
	9	6	9									
	10	10										
	11	1										
	12	9	3	6	12							
	13	4	7	1								
	14	1										
16	1											
	2	4	8	0								
	3	9	11	1								
	4	0										
	5	9	13	1								
	6	4	8	0								
	7	1										
	8	0										
	9	1										
	10	4	8	0								
	11	9	3	1								
	12	0										
	13	9	5	1								
	14	4	8	0								
	15	1										