[illegible]
[illegible]
[illegible]: [illegible] (Prolog)
[illegible]: [illegible] 2014-15
[illegible]: [illegible]

[illegible] 4:
[illegible]

[illegible] factorial(N) ([illegible]) [illegible]:

```
factorial(N) = factorial(N–1)*N
```

[illegible]:

```
factorial(1) = 1
```

[illegible] [illegible] factorial(3) [illegible] factorial(2), [illegible] factorial(1), [illegible] factorial(0), [illegible] factorial(-1), [illegible].

[illegible]: «***[illegible]*** *N–1* ***[illegible]*** *N*». [illegible].

> **[illegible]:**
>
> [illegible] f(x) [illegible] x=N. [illegible] f [illegible] x=N-1 [illegible] f(N) [illegible] f(N-1).
> [illegible] N, [illegible] ([illegible]!) N=0 [illegible] N=1.

[illegible] Prolog

[illegible] Prolog [illegible] Prolog [illegible] f(x) [illegible] fp(X,Y) [illegible] Prolog.
[illegible] ***[illegible]*** fact(N,Y) [illegible] ***[illegible]*** Y=factorial(N).

```
fact(1,1).

fact(N,Y) :-
     N>1,
     N1 is N-1,
     fact(N1,Y1),
     Y is Y1*N.
```

[illegible]1: [illegible] **is** [illegible] Prolog ([illegible]) [illegible] Prolog [illegible] **- [illegible] -** [illegible] **is** [illegible] Prolog [illegible] **?- fact(3, A).** [illegible] **?- fact(N, 6).**

[illegible]2: [illegible] N>1 [illegible] factorial [illegible] N>=0.

[illegible]:

- **read(X): [illegible]**

[illegible] **read(X)** [illegible] X, [illegible] (term) [illegible] Prolog. [illegible] read [illegible] Prolog [illegible], [illegible] string [illegible] «Hello», [illegible] 2435, [illegible] john, [illegible] name(nikos,papadakis) [illegible] X, [illegible]

[illegible]! [illegible] read, [illegible] (.) [illegible] input [illegible] <enter> [illegible] read [illegible]

- **write(X): [illegible].**

[illegible] **write(X)** [illegible] X, [illegible].

- **nl: [illegible]**

[illegible] **write** [illegible].

[illegible]!

(α) [illegible] -1 [illegible] 0 [illegible]. [illegible] Prolog [illegible], [illegible]:

```
?- natural(21).
   yes
?- natural(2.5).
   No
```

(β) [illegible] `power(X,N,P)` [illegible]: $P=X^N$. [illegible]:

```
?- power(3,5,X).
X = 243

?- power(4,3,X).
X = 64

?- power(2,4,X).
X = 16
```

(γ) [illegible] `fibo(N,Y)` [illegible] Fibonacci:

```
fibonacci(N) = fibonacci(N-1) + fibonacci(N-2)
fibonacci(2) = 1
fibonacci(1) = 1
```

[illegible] `fibonacci(N)` [illegible] `fibonacci()`, [illegible] `N` [illegible] `N-1`. [illegible]:

```
?- fibo(3,X).
X = 2

?- fibo(4,X).
X = 3

?- fibo(5,X).
X = 5

?- fibo(6,X).
X = 8
```

N	1	2	3	4	5	6	7	8
Fib	1	1	2	3	5	8	13	

?- fibo(8,X).

X=

(ŭ) õɟ Ÿɣ ŰŮŰɞ əŬŰɗɔɧɟ ɖɛŬ mkd(N,M,D) Űɞ ɘ΄ɘɶ ɡɚɘ΄ɘɘŮɑŰɗ ůɡɜŸɟ Űɗůɗ Űɞɡ ɀ ɏɔɘůŰɞɡ Ʈɘɞɘɨ ɸəŬɟɏŰɗ (ɀ Ʈɸ) ɛŰŰɜɨ Űɤ ɜ Ŭɟɘɗɛɩ ɜ N əŬɜ M:

```
MKΔ(N,M) = MKΔ(M,N), αν N<M
MKΔ(N,M) = MKΔ(M,mod(N,M)), αν N≥M
MKΔ(N,0) = N
```

H ůɡɜŸɟ Űɗůɗ mod(N,M) ŮɞŬɜŰɞ ɔɜɤ ůŰɧ modulo ŭɗɚŬŰɐ Űɞ ɡ΄ ɧɚɘ΄ ɘ Űɗɠ Ŭɚɏɟ ŬŬɠŭɘŬɡ Ůɗɗɠ ɛŰŰɜɨ N əŬɜ M. Ȼ ůɡɜŸɟ Űɗůɗ mod(N,M) ŮɞŬɜŬ ɧ Űɠ ɚɷŮɠ ůɡɜŬɟ Űɐ ůŮɠ΄ ɘɡ ɡ΄ Ÿɟ ɢŮɞ Ŭɡ Ŭɨ ůɞŬŮŰɗɜ Prolog. ɈŬɟ ŬŭŮɗɛŰŰ:

```
?- mkd(3,6,X).
X = 3

?- mkd(10,4,X).
X = 2

?- mkd(7,12,X).
X = 1

?- mkd(24,60,X).
X = 12
```

A/A	N	M
1	8	22
2	22	8
3	8	6
4	6	2
5	**2**	0

```
?- mkd(8,22,X).
X=
```

(Ů) õɟ Ÿɣ ŰŮɏɜŬ əŬŰɗɔɧɟ ɖɛŬ run ɢɤ ɟ ɠ ɢɟ ɑůɛ ŬŰŰ Űɞ ɘ΄ɘɶ ɗŬ ɛɗŰŸŬ ɧ Űɞ ɢɟ ɐůŰɗ ɜŬ ŮŬ ŸɔŮ 2 Ŭɟɘɛɘɨ ɠ A, B, əŬ ɗŬ Űɡ΄ ɩ ɜŮŬ ŮŰɗɜ ɘɗɧɜɗ ŰŰŮɐɠŬ ɘŰŰɑɏůɛ ŬŰŰ: AB, fibonacci(A), əŬ mkd(A,B). ɈŬɟ ŸŭŮɜɛ Ŭ:

```
?- run.
Dwse ton arithmo A:
6.
Dwse ton arithmo B:
4.
H dynamh A^B einai 1296
fibonacci(A) = 8
O megistos koinos diaireths A, B einai 2
```

ɗɞɐɗɗɛŬ:
write('Hello') → Hello
nl → ŬɚŬɐ ɔɟŬɛ ɛ ɐɠ ŮŬŰ ΄ɤ ůɗɠ
΄.G.
?-X is 6*2, write('Hi'),nl, write('The sum is '), write(X).

Hi
The sum is 12