According to the decompilation of the Ciso Vigenere hash algorithm, when the password length is less than 16 the idea behind Ciso Vigenere hash algorithm is:
Let p be the password that the user types.
Let hp be the hardcoded password in the code of Packet Tracer.
Let lp be the length of the user input password.
Let h be the hash value obtained from the custom algorithm.
So that:

$\forall h \forall lp \forall hp[(hp =$
$(d, s, f, d, ;, k, f, o, A, ,, ., i, y, e, w, r, k, l, d, J, K, D, H, S, U, B, s, g, v, c, a, 6, 9, 8, 3, 4, n, c, x, v),$
0 <lp <16,
$h_0 = 0$,
$h_1 = 8$,
h =

$$\Sigma_{i=2}^{lp} \begin{cases} ((p_i \oplus hp_{8+i}) \ggg 4) + 0x30, & \text{if } (h_i \oplus hp_{i+8} \wedge 0xfffffff0 < 0xa0) \text{ and if } i \equiv 0 \pmod 2 \\ ((p_i \oplus hp_{8+i}) \ggg 4) + 0x37, & \text{if } (h_i \oplus hp_{i+8} \wedge 0xfffffff0 \geq 0xa0) \text{ and if } i \equiv 0 \pmod 2 \\ ((p_i \oplus hp_{8+i}) \wedge 0xf) + 0x30, & \text{if } (h_i \oplus hp_{i+8} \wedge 0xf < 0x0a) \text{ and if } i \equiv 1 \pmod 2 \\ ((p_i \oplus hp_{8+i}) \wedge 0xf) + 0x37, & \text{if } (h_i \oplus hp_{i+8} \wedge 0xf \geq 0x0a) \text{ and if } i \equiv 1 \pmod 2 \end{cases}$$

$) \implies \nexists p[p = \mathbf{rev}(h)](0)$

Let's start by prooving

$\forall h \forall lp \forall hp[(hp =$
$(d, s, f, d, ;, k, f, o, A, ,, ., i, y, e, w, r, k, l, d, J, K, D, H, S, U, B, s, g, v, c, a, 6, 9, 8, 3, 4, n, c, x, v),$
0 <lp <16,
$h_0 = 0$,
$h_1 = 8$,
h =

$$\Sigma_{i=2}^{lp} \begin{cases} ((p_i \oplus hp_{8+i}) \ggg 4) + 0x30, & \text{if } (h_i \oplus hp_{i+8} \wedge 0xfffffff0 < 0xa0) \text{ and if } i \equiv 0 \pmod 2 \\ ((p_i \oplus hp_{8+i}) \ggg 4) + 0x37, & \text{if } (h_i \oplus hp_{i+8} \wedge 0xfffffff0 \geq 0xa0) \text{ and if } i \equiv 0 \pmod 2 \\ ((p_i \oplus hp_{8+i}) \wedge 0xf) + 0x30, & \text{if } (h_i \oplus hp_{i+8} \wedge 0xf < 0x0a) \text{ and if } i \equiv 1 \pmod 2 \\ ((p_i \oplus hp_{8+i}) \wedge 0xf) + 0x37, & \text{if } (h_i \oplus hp_{i+8} \wedge 0xf \geq 0x0a) \text{ and if } i \equiv 1 \pmod 2 \end{cases}$$

) $\implies \nexists p[p = \mathbf{rev}(h)]$
(0)

I/ substraction to reverse the addition
$\forall x[(x = y + z) \implies (y = ez)]$ then it follow that as the previous part of the function contains: $h = x + 0x30$, then $h - 0x30 = x$ so
$\exists rev(h)[rev(H(p)) = p - 0x30]$

II/ exclusive or
According to the boolean algebra about the exclusive logical or operation,
$\forall x[y = (x \oplus x) \implies (y = 0)]$.
$Thenas$ xlat $\oplus xlat = 0$, and as $p \oplus 0 = p$, we know that the original password $p = (xlat \oplus h)$.

III/ rotating 4 first to 4 last bits
$\forall x[(x \ggg y) \implies (x \lll y = x)]$.
Then as $z = (x \ggg y) = (x \lll y)$, we know that the original password
$p = H(p) \lll 4$.

IV/ unmasking different signatures (recurrent marks) in the password modification
In the previous chapter one 'I/ substraction to reverse the addition', we told we can reverse the previous addition. We still need to guess which addition/substraction has been done previously.

As both addition values are made depending to: if
$(p_l \wedge 0xf0 < 0xa0) \implies (p_l \wedge 0xf0 + 0x30)$ or else
$(p_l \wedge 0xf0 > 0xa0) \implies (p_l \wedge 0xf0 + 0x37)$
if ($\mathrm{p}_r \wedge 0x0f < 0x0a) \implies (p_r \wedge 0x0f + 0x30)$ or else
$(p_r \wedge 0x0f > 0xa0) \implies (p_r \wedge 0x0f + 0x37)$

So if the out has the 4 four bits value so that:
$x \in x|(0xf0x) \leq 0xa0 \implies y = x + 0x30$

So if the out has the 4 four bits value so that:
$x \in x|(0xf0x) > 0xa0 \implies y = x + 0x37$

So if the out has the 4 four first bits value so that:
$x \in x|(0x0fx) \leq 0x0a \implies y = x + 0x30$

So if the out has the 4 four first bits value so that:
$x \in x|(0x0fx) > 0x0a \implies y = x + 0x37$

first byte:
as $0xa0 < 0xf0 + 0x30 < y$
$-1 : \forall y \in H(x)[(x \in \{x|0xa0 < x\}) \implies (y \in \{y|0x00 < y < 0xa7\})]$
$-2 : \forall y \in H(x)[(x \in \{x|x < 0xa0\}) \implies (y \in \{y|0xc0 < y\})]$

second byte: as $0xa0 < 0x0f + 0x30 < y$
$-1 : \forall y \in H(x)[(x \in \{x|x < 0x0a\}) \implies (y \in \{y|0x3a < y\})]$
$-2 : \forall y \in H(x)[(x \in \{x|0x0a < x\}) \implies (y \in \{y|y < 0x4a\})]$

Then for both of any subnumber: that
$\forall y = H(x), x \in \{x|x \leq 0xa\} \implies y = x + 0x30$
$andthat\ \forall y = H(x), x \in \{x|x > 0xa\} \implies y = x + 0x37$

It follows:
that $\forall y = H(x)[(y \in \{y|0 < y \leq 0x0a + 0x30\}) \implies (x = y - 0x30)]$ then
$0 < x < 0x0a$
and that $\forall y = H(x)[(y \in \{y|0 < y \leq 0x0a + 0x37\}) \implies (x = y - 0x30)]$ then
$0x0a \leq x$

V /communtativity:
Addition, substraction and $\oplus$ are commutative.

VI / proof
Then we have already proven each piece of the theorem so that: $hp =$
$(d, s, f, d, ;, k, f, o, A, ,, ., i, y, e, w, r, k, l, d, J, K, D, H, S, U, B, s, g, v, c, a, 6, 9, 8, 3, 4, n, c, x, v) \implies$
$(\forall x \in hp[0 \geq x0 \geq 256 \implies x \in hp])$
then:

Let p be the password that the user types.
Let hp be the hardcoded password in the code of Packet Tracer.
Let lp be the length of the user input password.
Let h be the hash value obtained from the custom algorithm.
So that:

$\forall h \forall lp \forall hp[(hp \in N \wedge 0 \geq hp,$
0 <lp <16,

$h_0 = 0,$
$h_1 = 8,$
$h =$

$$\Sigma_{i=2}^{lp} \begin{cases} (((p_i \oplus hp_{i+8}) \lll 4) - 0x30), & \text{if } h_i < 0xa0 \text{ and if } i \equiv 0 \pmod 2 \\ (((p_i \oplus hp_{i+8}) \lll 4) - 0x37), & \text{if } h_i \geq 0xa0 \text{ and if } i \equiv 0 \pmod 2 \\ (((p_i \oplus hp_{i+8}) \wedge 0xffffffff0) - 0x30), & \text{if } h_i < 0x0a \text{ and if } i \equiv 1 \pmod 2 \\ (((p_i \oplus hp_{i+8}) \wedge 0xffffffff0) - 0x37), & \text{if } h_i \geq 0x0a \text{ and if } i \equiv 1 \pmod 2 \end{cases}$$

$) \implies \forall p[p = \mathbf{rev}(h)]$