so we are going to learn about the
epidermal hard derivatives that is the
digital quantification
from unit number one that is
integumentary systems. The outline of
this module is you're going to learn
about the digital cornifications like
claws nails and hooves. At the end of this
module
you'll be able to describe the
structures of
claws, nails, hooves and differentiate
between the different types of digital
conrnifications . You will be also
citing examples of animals that are
comprising of
claws, nails as well as hoof. so what is
digital cornification - digital
conification is the formation of a horny
layer
over the digits now this horny layer is
of stratum corneum
it can be in the form of claws or it can
be in the form of nails
or it can be in the form of hoofs. so
what's the function of digital
cognification
the function of these digital
Cornifications is that they cover the
tips of the digit
whether it's a reptile or a bird or it
can be a mammal
this process is very rarely seen in case
of amphibians
but there are some exceptions for
example in case of
south african toad that is xenopus leavis
wherein you'll find some cornified
endings in the digits of these
Toad so we also have another
exception
in spade footed toads that is scaphiopus
and pelobates underside of their
feet they have this conified
region and with this cornified region
they dig the
ground . so how does this process of

digital quantification takes place
all digital conifications they grow
parallel to the surface of the skin
they comprise of two plates one is the
dorsal plate
and the other one is the ventral plate
the dorsal
plate as it suggests it's there on the
dorsal side
whereas the ventral is on the ventral
side the dorsal placed
plate is known as the unguis and the
ventral plate
is called as the sub unguis another name
for this unguis
is compact horn or also called as nail
plate
whereas sub unguis is also known as
soul horn or soul plate now let us talk
about the first type of digital
cornification
that is claws are present in
reptiles
they're present in birds and they're
also present in mammals
so let us first talk about the reptilian
claws how are these claws different from
birds as well as the mammals so as we
can see here this is the structure of a
claw
a reptilian claw wherein we have a
dorsal blade
and a ventral blade as i have already
told that the dorsal plate is called as
the unguis
and the ventral plate is called as the
sub-unguis
now here in case of the unguis it is long
and it is sharply curved
and below this unguis there is a sub
unguis
now this particular claw is supported
internally by a terminal phalanx now
what exactly is the
phalanx is the bone that is supporting
this particular claw this bone can be
enough in the finger

or it can be in the toe so this
particular bone
is supporting this claw now we can see
there is a fold of skin here there is
invagination of the skin
and that is leading to a claw root now
at this
region the stratum germinativum is
continuously growing
and that is giving rise to the claw is
also growing along with that
the stratum corneum when we look at
the structure
externally the claw looks like that but
here
internally it looks somewhat like this
now here as we can see
the long unguis is covering the sub unguis
and this is the skin whereas here we can
see how
it is supported internally by the
terminal
phalanx let's talk about the claws in
birds
now in case of birds they have typical
reptilian claws
and they are present on the feet of
these birds but
there's an exception in a bird called as
ophistocomus
wherein the claws are present on the
digits of the
wings in the young ones but later on
they
disappear so that's the only exception
that is there
next is mammalian claws let us take
example
in case of rabbit the claws are shorter
than that of
the reptiles and the angus
is also is covering the sub-unguis but the
sub-unguis is very much reduced whereas
the sub-unguis is continuous with a fleshy
pad
that is marked as pad here now when
we talk about

carnivore mammals here if you can see
these claws in case of cat
these are retractile claws what do you
mean by retractile claws
these claws can be withdrawn inside this
pockets or protective sheets
when they are not in use so here if you
can see in the last picture
the claws are not visible they have
already been they have already withdrawn
inside the
Protective sheets now this can also be
seen in case of
tigers next type of digital conification
is nails these are characteristics of
primates
example is men here the unguis
or the nail plate is broad and it is
flattened
it also has a sub unguis but very short
sub-unguis and there is a fleshy pad
okay and this or this digit is also or
this
particular digital conification is also
supported by
a terminal phalanx whereas we can see
a nail groove as well whereas there is an
invagination
of skin now, when we look at the nail
internally in this particular picture
the nail is grown inside the nail groove
Now, this but this region is called as
the nail
root whereas at the base of the nail you
can see a
fold of skin which is stuck or by skin
that is called as the Eponytium
and if you can see at the base of these
nail the entire nail appears
pinkish in color because it's highly
vascularized but when we look at the
base of the nail
it has this moon shaped structure
called as the Lunula because here
the nail bed is less vascularized
so what's the difference between claws
and nails the only difference between a

claw and a nail is that
the sub unguis is very much reduced in case of
the nails we can also see an exception wherein in case of lemurs
there is the nails and the claws they coexist
wherein you can see some digits with nails and some with claws this is an exception let us move on to the last one
that is hooves now here this hoof
are characteristics of horses it can be pigs or rhinos
cows etc and these animals they walk over these hooves and the subunguis
is they have an unguis which is large and the animal actually walks over this unguis and below that they have a sub unguis
which is inturnr which is continuous with a pad
this is how it looks it has a blunt unguis
okay and it's it's a broad
unguis with which it walks so these are my
references you can refer them.