In [1]:
```
import pandas as pd
import numpy as np
from sklearn.preprocessing import OneHotEncoder
```

In [2]:
```
df = pd.read_csv("C:/Users/hp/OneDrive/Documents/Benficiary_Data.csv")
```

In [3]:
```
df.head()
```

Out[3]:

	Nature of participants	Place of residence	Attend school	Education	Category of agriculture	Type of agriculture	Form of Practice	Type of crop	Type of animals	Livestock as business	...	Type of services Offered	Reasons for not accessing Extension	Enj ser
0	Male 18 years and above	Rural	Yes	Secondary	Small scale	Livestock	Subsistence	None	Goats, Sheep	Yes	...	None	Extension Officers unavailable	
1	Male 18 years and above	Local Town	Yes	primarySchool	Small scale	Livestock	Commercial	None	Goats, Sheep	Yes	...	None	Extension Officers unavailable	
2	Male 18 years and above	Local Town	Yes	Secondary	Small scale	Livestock	Subsistence	None	Goats, Sheep	Yes	...	None	Extension Officers unavailable	
3	Male 18 years and above	Local Town	Yes	Secondary	Small scale	Livestock	Subsistence	None	Goats, Sheep	Yes	...	None	Extension Officers unavailable	
4	Male 18 years and above	Local Town	Yes	Secondary	Small scale	Livestock	Subsistence	None	Camels	No	...	None	Lack of offices	

5 rows × 44 columns

In [4]:
```
df.tail()
```

Out[4]:

	Nature of participants	Place of residence	Attend school	Education	Category of agriculture	Type of agriculture	Form of Practice	Type of crop	Type of animals	Livestock as business	...	Typ servi Offe
174	Male 18 years and above	Local Town	Yes	primarySchool	Small scale	Mixed agriculture	Subsistence;Commercial	Grain	Goats;Sheep	Yes	...	N
175	Male 18 years and above		Yes	primarySchool	Small scale	Mixed agriculture	Subsistence;Commercial	Grain	Goats;Sheep; Cattle	Yes	...	G agricult produc practi
176	Male 18 years and above	Rural	Yes	University	Others	Livestock	Subsistence	Grain	Camels;Goats	Yes	...	N
177	Male 18 years and above	Rural	Yes	Secondary	Small scale	Livestock	Subsistence	Non	Goats;Sheep	Yes	...	N
178	Male 18 years and above	Rural	Yes	Secondary	Small scale	Livestock	Subsistence	Non	Goats;Sheep	Yes	...	N

5 rows × 44 columns

In [5]:
```
df.dtypes
```

Out[5]:

```
 Nature of participants                 object
Place of residence                      object
 Attend school                          object
Education                               object
 Category of agriculture                object
Type of agriculture                     object
Form of Practice                        object
Type of crop                            object
Type of animals                         object
Livestock as business                   object
Number of livestock                     object
Livestock sold                          object
No of HA                                object
Effects of drought                      object
Effects of droughts on agriculture      object
Source of water                         object
Access to loans                         object
Organizations involved                  object
Services offered                        object
Effects of droughts on agric            object
Understanding drought                   object
Learning drought assistance             object
Initial source of finance               object
Procuring agriculture                   object
Amount spent(KES)                       object
Activities                              object
Expenses on agriculture                 object
Extenstion service                      object
Organiations involved                   object
Challenges faced                        object
Group of marketers                      object
 Benefits of Group of marketers         object
 Reasons for not being in a group       object
Access to extention services            object
Type of services Offered                object
Reasons for not accessing Extension     object
Enjoying govt services                  object
Types of govt services offered          object
Reasons for lack of  govt services      object
Insurance cover                         object
Challenges on Insurance                 object
Training Services                       object
skills and knowledge obtained           object
 Reasons for not engaging in Training   object
dtype: object
```

In [6]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 179 entries, 0 to 178
Data columns (total 44 columns):
 #   Column                                 Non-Null Count  Dtype
---  ------                                 --------------  -----
 0    Nature of participants                179 non-null    object
 1   Place of residence                     179 non-null    object
 2    Attend school                         179 non-null    object
 3   Education                              179 non-null    object
 4    Category of agriculture               179 non-null    object
 5   Type of agriculture                    179 non-null    object
 6   Form of Practice                       179 non-null    object
 7   Type of crop                           179 non-null    object
 8   Type of animals                        179 non-null    object
 9   Livestock as business                  179 non-null    object
 10  Number of livestock                    179 non-null    object
 11  Livestock sold                         179 non-null    object
 12  No of HA                               179 non-null    object
 13  Effects of drought                     179 non-null    object
 14  Effects of droughts on agriculture     179 non-null    object
 15  Source of water                        179 non-null    object
 16  Access to loans                        179 non-null    object
 17  Organizations involved                 179 non-null    object
 18  Services offered                       179 non-null    object
 19  Effects of droughts on agric           179 non-null    object
 20  Understanding drought                  179 non-null    object
 21  Learning drought assistance            179 non-null    object
 22  Initial source of finance              179 non-null    object
 23  Procuring agriculture                  179 non-null    object
 24  Amount spent(KES)                      179 non-null    object
 25  Activities                             179 non-null    object
 26  Expenses on agriculture                179 non-null    object
 27  Extenstion service                     179 non-null    object
 28  Organiations involved                  179 non-null    object
 29  Challenges faced                       179 non-null    object
 30  Group of marketers                     179 non-null    object
 31   Benefits of Group of marketers        179 non-null    object
 32   Reasons for not being in a group      179 non-null    object
 33  Access to extention services           179 non-null    object
 34  Type of services Offered               179 non-null    object
 35  Reasons for not accessing Extension    179 non-null    object
 36  Enjoying govt services                 179 non-null    object
 37  Types of govt services offered         179 non-null    object
 38  Reasons for lack of  govt services     179 non-null    object
 39  Insurance cover                        179 non-null    object
 40  Challenges on Insurance                179 non-null    object
 41  Training Services                      179 non-null    object
 42  skills and knowledge obtained          179 non-null    object
 43   Reasons for not engaging in Training  179 non-null    object
dtypes: object(44)
memory usage: 61.7+ KB
```

In [7]:
```
df.isna().sum()
```

Out[7]:
```
 Nature of participants                 0
Place of residence                      0
 Attend school                          0
Education                               0
 Category of agriculture                0
Type of agriculture                     0
Form of Practice                        0
Type of crop                            0
Type of animals                         0
Livestock as business                   0
Number of livestock                     0
Livestock sold                          0
No of HA                                0
Effects of drought                      0
Effects of droughts on agriculture      0
Source of water                         0
Access to loans                         0
Organizations involved                  0
Services offered                        0
Effects of droughts on agric            0
Understanding drought                   0
Learning drought assistance             0
Initial source of finance               0
Procuring agriculture                   0
Amount spent(KES)                       0
Activities                              0
Expenses on agriculture                 0
Extenstion service                      0
Organiations involved                   0
Challenges faced                        0
Group of marketers                      0
 Benefits of Group of marketers         0
 Reasons for not being in a group       0
Access to extention services            0
Type of services Offered                0
Reasons for not accessing Extension     0
Enjoying govt services                  0
Types of govt services offered          0
Reasons for lack of  govt services      0
Insurance cover                         0
Challenges on Insurance                 0
Training Services                       0
skills and knowledge obtained           0
 Reasons for not engaging in Training   0
dtype: int64
```

In [8]:
```
df.columns
```

Out[8]:
```
Index([' Nature of participants', 'Place of residence', ' Attend school',
       'Education', ' Category of agriculture', 'Type of agriculture',
       'Form of Practice', 'Type of crop', 'Type of animals',
       'Livestock as business', 'Number of livestock', 'Livestock sold',
       'No of HA', 'Effects of drought', 'Effects of droughts on agriculture',
       'Source of water', 'Access to loans', 'Organizations involved',
       'Services offered', 'Effects of droughts on agric',
       'Understanding drought ', 'Learning drought assistance',
       'Initial source of finance', 'Procuring agriculture',
       'Amount spent(KES)', 'Activities', 'Expenses on agriculture',
       'Extenstion service', 'Organiations involved', 'Challenges faced',
       'Group of marketers', ' Benefits of Group of marketers',
       ' Reasons for not being in a group', 'Access to extention services',
       'Type of services Offered', 'Reasons for not accessing Extension',
       'Enjoying govt services', 'Types of govt services offered',
       'Reasons for lack of  govt services', 'Insurance cover',
       'Challenges on Insurance', 'Training Services',
       'skills and knowledge obtained',
       ' Reasons for not engaging in Training'],
      dtype='object')
```

In [66]:
```
df['Number of livestock'].unique()
```

Out[66]:
```
array([' 100-150 ', ' 50-100 ', '30', '150-200 ', ' 200-250 ', '0', '22',
       '50-100', '7', '8', '300 and above ', '10', '6', '15', '33',
       '20-30', '13', '16', '17', '300', ' 300 and above '], dtype=object)
```

In [9]:
```
df['Place of residence'].unique()
```

Out[9]:
```
array(['Rural', 'Local Town ', 'Nearby market',
       'Local Town ;Nearby market', ' '], dtype=object)
```

In [42]:
```
df['Type of animals'] = df['Type of animals'].str.strip().str.lower().replace({
    'camels;donkeys ];goats;sheep; cattle; poultry':'camels;donkeys;goats;sheep; cattle; poultry',
    'goats;sheep': 'goats,sheep',
    'onions and tomatoes': 'None',
})
```

In [43]:
```
df['Type of animals'].unique()
```

Out[43]:
```
array(['goats, sheep', 'camels', 'camels, goats, sheep', 'donkeys, goats',
       'cattle', 'camels, donkeys, goats',
       'camels, goats, sheep,  cattle', 'none', 'camels, sheep,  cattle',
       'None', 'goats, sheep,  cattle', 'goats,  cattle',
       'goats,  poultry', 'goats, sheep,  poultry', 'goats', 'poultry',
       'sheep', 'camels;donkeys;goats;sheep; cattle; poultry',
       'camels;donkeys;goats;sheep; cattle',
       'donkeys;goats;sheep; poultry', 'camels;donkeys;goats;sheep',
       'goats; cattle', 'camels;donkeys;goats;sheep; poultry',
       'camels;donkeys;goats; cattle; poultry', 'camels;goats; cattle',
       'goats,sheep', 'camels;goats', 'camels; cattle',
       'donkeys;goats;sheep', 'donkeys;goats; cattle', 'donkeys; cattle',
       'goats;sheep; cattle'], dtype=object)
```

In [44]:
```
columns_to_check = [' Nature of participants', 'Place of residence', ' Attend school',
       'Education', ' Category of agriculture', 'Type of agriculture',
       'Form of Practice', 'Type of crop', 'Type of animals',
       'Livestock as business', 'Number of livestock', 'Livestock sold',
       'No of HA', 'Effects of drought', 'Effects of droughts on agriculture',
       'Source of water', 'Access to loans', 'Organizations involved',
       'Services offered', 'Effects of droughts on agric',
       'Understanding drought ', 'Learning drought assistance',
       'Initial source of finance', 'Procuring agriculture',
       'Amount spent(KES)', 'Activities', 'Expenses on agriculture',
       'Extenstion service', 'Organiations involved', 'Challenges faced',
       'Group of marketers', ' Benefits of Group of marketers',
       ' Reasons for not being in a group', 'Access to extention services',
       'Type of services Offered', 'Reasons for not accessing Extension',
       'Enjoying govt services', 'Types of govt services offered',
       'Reasons for lack of  govt services', 'Insurance cover',
       'Challenges on Insurance', 'Training Services',
       'skills and knowledge obtained',
       ' Reasons for not engaging in Training']
```

In [45]:
```
# Clean up and merge similar values for 'Education'
df['Education'] = df['Education'].str.strip().str.lower().replace({
    'primaryschool': 'primary school',
    'illiterate': 'illiterate',
    'college;university': 'college/university',
    'secondary': 'secondary',
    'college': 'college',
    'university': 'university'
})
```

In [46]:
```
# Clean up and merge similar values for 'Place of residence'
df['Place of residence'] = df['Place of residence'].str.strip().str.lower().replace({
    'Local town':None ,
    'nearby market':'rural',
    'local town ;nearby market': 'local town',
    '': None  # Replace ' ' with None to remove or replace it with a specific value
})
```

In [47]:
```
df['Type of animals'] = df['Type of animals'].str.strip().str.lower().replace({
           'Camels;Donkeys];Goats;Sheep;Cattle;Poultry':'Camels;Donkeys;Goats;Sheep;Poultry',
           'Goats;Sheep': 'Goats,Sheep',
           'Onions and Tomatoes':'None',
})
```

In [48]:
```
for column in columns_to_check:
    unique_values = df[column].unique()
    print(f"Unique values in '{column}': {unique_values}")
```

```
Unique values in ' Nature of participants': ['Male 18 years and above' 'Female18 years and above'
 '2 Female below 16 years' 'Male below 16 years']
Unique values in 'Place of residence': ['rural' 'local town' None]
Unique values in ' Attend school': ['Yes' 'No' 'Yes ' 'No ']
Unique values in 'Education': ['secondary' 'primary school' 'illiterate' 'college' 'university'
 'college ;university']
Unique values in ' Category of agriculture': ['Small scale ' 'Small  scale' ' Others' 'Small scale ; Others'
 ' Large scale']
Unique values in 'Type of agriculture': ['Livestock' 'Grains ' 'Small scale ' 'Mixed agriculture' 'Horticulture
'
 ' Mixed agriculture' ' Livestock' 'Small scale ; Mixed agriculture'
 '2 Large scale']
Unique values in 'Form of Practice': ['Subsistence' 'Commercial' 'Subsistence, Commercial'
 'Subsistence;Commercial']
Unique values in 'Type of crop': ['None' 'Cereals/grains' 'Cereals/grains, Onions,Tomatoes'
 'Cereals/grains, Onions,Potatoes,Tomatoes'
 'Cereals/grains,Fruits/Horticulture' 'Onions' 'No' 'Fruits/Horticulture'
 'Forder, Cereals/grains,Fruits/Horticulture' 'Commercial Feeds' 'None '
 'Tomatoes/Onions' 'Cereals/grains, Onions and tomatoes '
 'Cereals/grains, Onions & tomatoes' 'Forder' 'Grain;Fodder'
 'Grain;2 Fibres ' 'Grain;Other' 'Grain' 'Fibres ' 'Grain;Fibres ;Fodder'
 'Grain; Fruits ;Fodder;5 Horticulture ;Other'
 'Grain;Fodder;5 Horticulture ' 'Grain;2 Fibres ;Fodder' 'Grain;Fibres '
 ' Fruits ' 'Grain;Fibres ;Fruits ' 'Grain;Fodder;Horticulture ' 'Fodder'
 '2 Fibres ;Fodder' 'Non']
```

```
Unique values in 'Type of animals': ['goats, sheep' 'camels' 'camels, goats, sheep' 'donkeys, goats' 'cattle'
 'camels, donkeys, goats' 'camels, goats, sheep,  cattle' 'none'
 'camels, sheep,  cattle' 'goats, sheep,  cattle' 'goats,  cattle'
 'goats,  poultry' 'goats, sheep,  poultry' 'goats' 'poultry' 'sheep'
 'camels;donkeys;goats;sheep; cattle; poultry'
 'camels;donkeys;goats;sheep; cattle' 'donkeys;goats;sheep; poultry'
 'camels;donkeys;goats;sheep' 'goats; cattle'
 'camels;donkeys;goats;sheep; poultry'
 'camels;donkeys;goats; cattle; poultry' 'camels;goats; cattle'
 'goats,sheep' 'camels;goats' 'camels; cattle' 'donkeys;goats;sheep'
 'donkeys;goats; cattle' 'donkeys; cattle' 'goats;sheep; cattle']
Unique values in 'Livestock as business': ['Yes ' 'No ']
Unique values in 'Number of livestock': [' 100-150 ' ' 50-100 ' '30' '150-200 ' ' 200-250 ' '0' '22' '50-100' '
7'
 '8' '300 and above ' '10' '6' '15' '33' '20-30' '13' '16' '17' '300'
 ' 300 and above ']
Unique values in 'Livestock sold': ['5%' '1%' '10%' '15%' '0' '3%' '33' '5' '40' '35' '20%' '1' '10%, ' '2%'
 '10' 'Over 20%' '5%, ' ' ']
Unique values in 'No of HA': ['None' ' 1. 5 -10 ' '50 by 100' '1.5-10' '1.5' 'No' '0.5' '3' '4acres'
 '2 acres ' '0.35' 'None ' '1' '2' ' 10 - 15' '1. 5 -10']
Unique values in 'Effects of drought': ['None' ' More severe' 'Moderate' 'Severe' 'More severe']
Unique values in 'Effects of droughts on agriculture': ['None' 'Lack of water\nLack of feeding grass'
 'Lack of water\nLack of grass' 'Lack of water and pasture'
 'No water ,No pasture-livestock die  '
 'Livestock-lack of water and pasture' 'Lack of water & pasture'
 'For livestock-lack of grazing pastures-lack of water'
 'Lack of water , grass & feeding stuff'
 'Lack of water lack of feeding stuff' 'Lack of water & grazing grass'
 'Lack of water and pasture for feeding '
 'Water for farming Not available' 'Crops and livestock'
 'Lack of water,lack of pasture for grazing'
 'No Water for farming,High prices of fertilizers and High cost of labour'
 'Lack of Water,Lack of pasture for grazing'
 'Lack of Water,Lack of Pasture for grazing'
 'Lack of water,Lack of pasture for grazing'
 'Lack of Water,Lack of Pasture for Livestock.'
 'Lack of water,Lack of Pasture for Grazing'
 'Lack of water,lack of pasture' 'Lack of Water,Lack of Pasture'
 'Lack of Water, Lack of Pasture' 'Lack of Water,High price of Fertilizer'
 'Lack of Water,Lack of Fertilizers' 'Lack of Water,Lack of Fertilizer'
 'Lack of Water ,Lack of Pasture for grazing'
 'Lack of Water,High price of Fertilizer,lack of pasture for grazing'
 'Lack of water & pasture for grazing'
 'Lack of water,lack of pasture,lack of fertilizer'
 'High price of Fertilizer,lack of water'
 'Water shortage for livestock & lack of pasture for grazing'
 'Lack of Water,Insecurity,lack of Pasture'
 'Lack of feeding stuff & water'
 'Lack of water for farming,High price of fertilizers,high cost of labour'
 'Lack of Water,Lack of Fertilizer,Lack of Pasture'
 'Lack of water & grazing pastures'
 'Lack of Water,Lack of Pasture,Insecurity'
 'Water shortages for livestock \nLack of pasture for grazing'
 'Lack of water for animals\nLack of pasture for grazing'
 'Lack of pasture for grazing & water shortage'
 'Lack of Water,High labour cost,High prices of Fertilizer'
 'Lack of Water, Lack of Pasture for grazing'
 'Lack of grazing pasture & water for livestock'
 'Lack of grazing pastures & water for livesock'
 'Lack of grazing pasture & water' 'Lack of grazing pastures & water'
 'Lack of Water,Lack of Feeding stuffs'
 'Lack of Water,Lack of grazing pasture'
 'Few acres of land utilised \nLack of water for irrigation\nLow production\nSlow circulation of money'
 'Poor production\nLimited source of finances \nLack of water for irrigation purposes\nPoor access to good mark
et '
 'No water for both animals and agriculturReduction in production thus low profit margins'
 'Drought has really affected my agricultural operations in all aspects of my life because I rely on growing cr
ops for sale and consumption ,Now I do Not have source of livestock '
 'Drought affect my agricultural through the death of livestock as part of my business liability'
 'Lack of pasture for grazing & water for livestock'
 'Lack of gazing pasture &  water for livestock'
 "We don't have water for crops because of drought the water for irrigation is finished "
 'Lack of  water for livestock.\nLack of pasture for gazin'
 'Lack of water \nLack of pasture for grazing '
 'Lack of water for livestock.\nLack of pasture for grazin'
 'Lack of water \nLack of fertilizer '
 'High price of fertilizer \nLack of water for farming'
 'Lack of water \nLack of pasture '
 'Lack of water for livestock.\nLack of pasture for grazin\n'
 'High prices of fertilizer\nLack of farming water'
 'Lack of water for farming\nHigh prices of fertilizer '
 'Lack of water for look livestock.\nLack of pasture for grazin'
 'High price for fertilizer\nLack of water for farming and livestock\nLack of pasture for grazing'
 'Lack of water for farming \nHigh price of fertilizer '
 'Lack of water affects business'
 'Lack of water for farming \nLack of fertilizer \nHigh price '
 'High cost of fertilizer \nLack of water for farming '
 'Lack of water for farming \nLack of money to purchase fertilizer '
 'Lack of fertilizer & water for farming'
```

```
 'Water shortage\nHigh prices of fertilizer '
 'Lack of farming water \nHigh price of fertilizer '
 'Lack of water for farming\nHigh price of fertilizer'
 'Lack of pasture leading to low production milk and price when selling goats'
 'High price of poultry feeds\nLoss of chicken'
 'Lack of Water;Lack of Pasture for grazing;Insecurity'
 'Lack of Water;Lack of Pasture for grazing;high cost of Labour;High price of fertilizer'
 ' livestock died :Reduced income;Lack of water and pasture;Animal conflict/Bandits'
 'Severe' 'Most severe'
 '(1)leads pre- Wilting of crops, (2)lead to death of different ivestocks species.'
 'Less income generated and profit loss'
 '(1)Because we practice rainfed Agriculture and the rain is Not there therefore crop is Not practiced much bec
ause of lack of rain. (2)body condition of Livestock is Not good, and also many have die'
 'Destruction of crop' 'Rip failure and pasture deterioration' 'Very bad'
 'Cause mass destruction of crop' 'Cause loss in terms of production'
 'Reduce production' 'Emerging of crop disease, poor income' 'Causes loss'
 'Cause losses' 'Cause mass destruction and losses'
 'Decrease income and profit' 'Incurred losses' 'Death of Livestock'
 'Cause mass destruction' 'Reduce income and production' 'Causes losses'
 'More severe'
 'Reduce income\nReduce production Crop wilting Malnutrition and food insecurity'
 'Failed rain,No water and fertilizers' 'Low production of milk yield'
 'Reduced agricultural produce'
 'Reduced agricultural and livestock production' 'Low yield'
 'Silting of farm\n' 'Animal disease;\nSilting' 'Reduce farm production'
 'Low farm yield' 'Reduced agricultural  production'
 'Very low agricultural production' 'Low agricultural production'
 'Drought really affected agricultural production'
 'Low production of agricultural produce'
 'Decrease in agricultural produce' 'Low production in income'
 'Reduces income' 'Decreases agricultural produce'
 'Severe drought resulted low agricultural production'
 'Reduced agricultural production' 'Negative impact' 'Little production']
Unique values in 'Source of water': ['Dams/ponds' 'Dams/ponds, Boroughs/taps' 'Boroughs/taps' 'Rain'
 ' Irrigation, Dams/ponds' 'Rain,  Irrigation, Dams/ponds' ' Irrigation'
 'Rain, Dams/ponds' 'Dams/ponds;Boroughs/taps'
 'Rain;Dams/ponds;Boroughs/taps' 'Rain;Dams/ponds' 'Rain; Irrigation']
Unique values in 'Access to loans': ['No ' 'Yes ']
Unique values in 'Organizations involved': ['None' 'Private sector' 'SACCOS' 'NGOS' 'None ' 'Banks;SACCOS'
 'NGOS;Private sector' 'Banks;NGOS' 'Banks;SACCOS;Private sector'
 'SACCOS;Private sector' 'Banks' 'Banks;Private sector']
Unique values in 'Services offered': ['None' 'Fertilizer\nPesticides\nSpray Pumps\nMoney without interests'
 'Agricultural imports .ie fertilizers, pesticides \nLoans without interests'
 'Information on the new methods of farminFarm inputs.Pestcides'
 'The sacco offered a loan to me i.e four times my savings amounted to (148000)One hundred and forty eight thou
sand'
 'Distribution of hay and tow for livestock\nDuring the drought session also bringing the market nearer'
 'Family members are the people who supports me and also my savings '
 'None '
 "Due to regulations it's impossible to get loans that are compatible with the obligations of our faith; Islami
c bank has no relation with local farmers and had No such facilities to support farmers . There are little supp
ort from Non government agencies."
 'Credit and livestock feeds' 'Credit' 'Credit offers'
 '1)provisions of vegetable seeds,' 'NGOS'
 'They provide seeds for crop production.' 'Grants'
 'Loans and training on adaptation' 'Business grants' 'Provsion of grants'
 'Provision of farm tools' 'Credits' 'Business Grants'
 'Provide inputs like seed and fertilizers'
 '1. Livestock vaccination and treatments 2. Training 3. Provsion of livestock feeds'
 'Credit offer' 'Provide support and grants' 'Business support'
 'Grants Support' 'Animal vaccination'
 'Livestock treatment, vaccination, training, cash transfer'
 'Buying animals From farmers by bringing the market closer to the people'
 'Finance' 'Milk sellers' 'Merry go round or Ayuta contribution'
 'Trading partners' 'Provide inputs to farm Members'
 'Support from friends' 'Members contributions'
 'Training on farm management' 'Start up of the Business'
 'Helped in initial start up' 'No much support' 'Little support'
 'Helped in training and advice' 'Initial business support'
 'Members contributions really helps' 'Insurance from Takaful insurance']
Unique values in 'Effects of droughts on agric': [' 11-25 %' ' 1-10 %' ' 26-50 %' ' 76-100 %' ' 51-75 %'
 ' No income reduction']
Unique values in 'Understanding drought ': ['No' 'Yes']
Unique values in 'Learning drought assistance': [' Government Agencies' 'None' ' Very little' 'Very little'
 ' Government Agencies, Very little'
 ' Government Agencies, Information and trainings'
 'Friend, Media, Newspapers' 'Friend' 'Relative' 'None ' 'Media'
 ' Government Agencies, Very little ' 'Friend, Media'
 'Relative;Friend;Media; Government Agencies' 'Relative;Friend;Media'
 'Relative;Media' 'Relative;Friend;Newspapers; Government Agencies'
 'Relative;Friend; Government Agencies' 'Relative;Friend;Media;Newspapers'
 'Friend; Traders;partners; NGO'
 'Relative;Friend;Media;Newspapers; Government Agencies;6 Bank;financial institution'
 'Relative;Friend;Media;Newspapers; Government Agencies'
 'Friend;Media; Government Agencies; NGO' 'Newspapers' 'Relative;Friend'
 'Relative; NGO' 'Relative;Friend;Media; Traders;partners; NGO'
 ' Traders;partners' '6 Bank;financial institution'
 '6 Bank;financial institution; Traders;partners'
 'Relative; Traders;partners' 'Relative;Friend; Traders;partners'
```

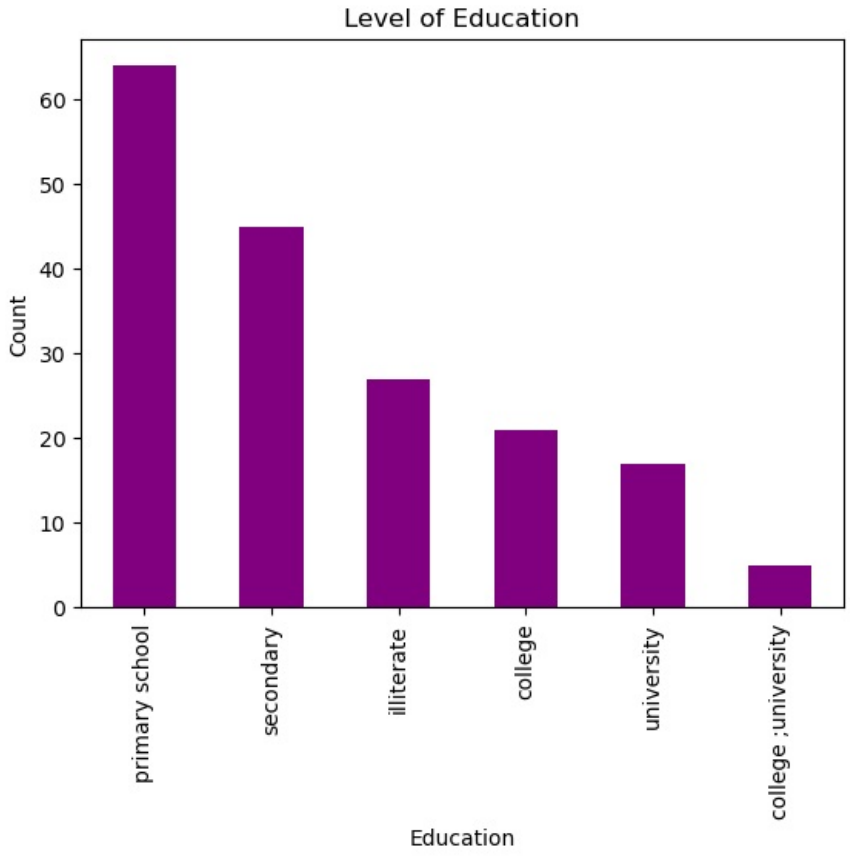
```
 'Relative;Friend;Media;Newspapers; Government Agencies; Traders;partners; NGO']
Unique values in 'Initial source of finance': [' Inherited;relative' ' Inherited;relative, Own Savings' 'Own Sa
vings'
 'None' 'Own Savings, Agricultural proceed in sales    Livestock sales'
 'Own Savings; Sales from animals; Selling agricultural products '
 ' Savings ;Credit;, Own Savings' ' Savings and Credit Society, N;A'
 'Own Savings, I sold few goats then I added with the little savings I save '
 'Own Savings, Leased farm' 'Friend'
 ' Savings and Credit Society;Friend;Own Savings'
 'Bank; Savings and Credit Society'
 'Bank; Savings and Credit Society; Inherited;relative'
 'Bank;Friend; Inherited;relative' 'Friend; Inherited;relative'
 ' Inherited;relative;Own Savings;Support from government,'
 'Bank; Inherited;relative;Own Savings' ' Inherited;relative;Own Savings'
 'Bank; Savings and Credit Society;Own Savings' 'Friend;Own Savings'
 'Friend; Inherited;relative; Own Savings' 'Sales of livestocks'
 ' Inherited;relative;Well wishers' 'Bank; Inherited;relative'
 'Bank; Savings and Credit Society;Friend' ' Inherited;relative;Sales'
 'Friend;Sales' ' Savings and Credit Society'
 ' Savings and Credit Society; Inherited;relative']
Unique values in 'Procuring agriculture': ['Friends;Relatives;NGOs' 'None' 'Cash purchases' 'Cash purchases, Lo
ans'
 'Cash purchases, Through sales from livestock and agricultural proceeds'
 'Cash purchases, Information and techNology.' 'Loans' 'None '
 'Cash purchases;Grants' 'Cash purchases;Friends;Relatives;NGOs'
 'Cash purchases;Grants;Friends;Relatives;NGOs'
 'Loans;Friends;Relatives;NGOs' 'Grants'
 'Cash purchases;2 Subsidies;Grants']
Unique values in 'Amount spent(KES)': ['120000' '50 000' '150,000' '40 000' '70 000' '1,000,000' '80 000'
 '100 000' '100,000' '100000' '150 000' '85 000' '75000' '215,000' '28000'
 '30000' '400000' '300000' '50000' '20000' '80000' '15000' '150000'
 '90000' '240,000' '120 000' '50,000' '30 000' '300,000' '30,000' '75 000'
 '200 000' '35 000' '130 000' '105 000' '110 000' '75,000' '60,000'
 '250 000' '70000' '450000' '20 000' '5000' '26,000' '27,000' '200000'
 '24000' '220 000' '25,000' '250000' '45,000' '350 000' '55000' '35000'
 '45000' '3 500' '3000' '22 000' '500' '40000' '60000' '8000' '7500'
 '350,000.00' '80%' '6000' '90%' '86%' '4500' '70%' '75%' '71%' '0'
 '10,000' '87%' '76%' '10000' '230000' '200,000' '80,000' '25000']
Unique values in 'Activities': ['Livestock' 'Livestock feeds ; watering'
 'Livestock-animal feeds ; watering' 'Livestock , feeds ; watering'
 'Livestock-watering ; animal feed' 'Livestock-water ; feeds' 'Livestock '
 'Farming' 'Livestock ; inputs' 'Livestock ; Farming'
 'Livestock ; farming' 'Farming;livestock'
 'Pesticides\nFertilizer\nAnimal Feeds' 'Livestock ; agriculture '
 'Livestock ; agricultur' 'Farming ' 'Livestock keeping'
 'Buy the grass for goats that remained because many of them died because of the drought  '
 'Poultry' 'Farming\nLivestock' 'Poultry Farming' 'Farming ; Livestock'
 'Both livestock ; crop maintainance' 'Mixed agricultural ' 'Mixed'
 'Livestock ; Agriculture ' 'Livestock sell' 'Agriculture ; livestock '
 'Agriculture ; Livestock ' 'Livestocks'
 'Purchae of supplementary feeds for livestocks .water trucking for lifestock ; human consumption'
 'Purchase of feeds' 'Milk selling ' 'Selling of vegetables '
 'Milk sellers ' 'livestock' 'Livestock market ' 'Selling Meat '
 'Animal rearing ; grain growing ' 'Mixed farming ' 'Farm products '
 'Livestock rearing ' 'Livestock drugs for thier treatment']
Unique values in 'Expenses on agriculture': ['Declined because of prolonged drought' 'Decline'
 'Declined because the livestock died' 'Declined' 'Decline due to deaths'
 'Declined ' 'Declined income' 'Decline income' 'Total loss'
 'Total decline' 'Decline greatly' 'Decline of income'
 'My income income declined' 'Income declined' 'Decline in my profit'
 'Decline in my income greatly' 'Decline in my income' 'Declined greatly'
 'Declined my profit due to drought' 'My Profit declined'
 'My income declined significantly' 'Decline in my income due to death'
 'My income declined due to deaths of livestock' 'My Profit Decline'
 'My Profit Declined' 'Declined Profit' 'My profit Decline'
 'There is low production\nHigh cost production'
 '(Decline) Reduction on working\nCapital\nPoor profit margins'
 'Loss\nUtilizing few acres of land '
 'I have suffered a huge loss and this has contributed to a decline in my soul income from agriculture to get b
ack to my feet'
 'Decline by a high margin' 'Declined because livstock died'
 'Income declined by half'
 'I used to sell my goats at a high price but since the drought came I sold Nothing because the price was low a
lso the market was Not good '
 'Decline of income by hal' 'Decline the income '
 'At times you are unable to extend the business.'
 'My income declined by hal' 'Decline my income '
 'My income decline by half ' 'Decline income\n' 'Total Loss'
 'Decline income ' 'Declined my income ' 'My income declined by half'
 'Decline in income ' 'Decline my income by half '
 'No income since during drought there is low milk None for sale and breeding due to lack of pasture'
 'My profit reduced'
 'Bought pest and animal drugs to prevent them are at loss' 'Very good'
 'Good' 'Less household income' 'Very goood' 'Increased expenses'
 'Increase income' 'Great improvement interms of production'
 'Less improvement' 'Great improvements' 'Increased crop production'
 'Increased production rate' 'A bit decline in income generation'
 '50% decline' 'Increased agricultural production'
 'Increase productivity of crop' 'Good improvements'
```

```
 'Increase productivity' 'Increased productivity and profits'
 'Cause decline' 'Brought about steady decline' 'decline by 70%'
 'Improvement' 'Positive change' 'No much expenditure' 'Declined by 60%'
 'Some improvement Noted' 'No change' 'Slight change' 'Little change'
 'Increases production' 'Increases income'
 'During drought more much change' 'Decline due to severe drought'
 'No much change' 'Decline in income' 'Reduces income'
 'Slightly Increases production' 'Income increases' 'Decreases income'
 'Slightly Increases production of agricultural produce'
 'Some improvement realized' 'Very little change' 'Somewhat'
 'Declined-because of prolonged drought.']
Unique values in 'Extenstion service': ['Veterinary services' 'None' 'services' ' Equipment for hire'
 ' Equipment for hire, Government subsidies'
 ' Equipment for hire, Communal machines;tools, Government subsidies'
 ' Equipment for hire, Communal machines;tools, Government subsidies, County government. Iractor for hire at '
 'Communal machines;tools' 'None '
 'Communal machines;tools;Government subsidies'
 'Land mechanization;Communal machines;tools'
 'Land mechanization;Communal machines;tools;Government subsidies'
 'Training and market sourcing' 'Land mechanization'
 'Vaccination for livestocks' 'Land mechanization;Government subsidies'
 'Government subsidies' 'Livestock treatment and vaccinations'
 'Not Applicable' ' Equipment for hire;Communal machines;tools'
 'Veterinary services.']
Unique values in 'Organiations involved': ['Veterinary services' 'None' 'County government'
 'Private tractors for preparations of land' 'Mine'
 'County Government:  Fertilizers on reasonable price\n                                        Tractors or plough
ing at reasonable price'
 'County government (equipment for hire (tractors)'
 'I can hire water pump from my fellow farmers and other business men who lend farming tools and equipments in
the county .Plumbers and mechanics are readily available which is aNother extension service in Isiolo'
 'No government expenditure' 'None ' 'Not received support'
 'Not well connected ' 'No connection '
 'Lack of knowledge on access to providers'
 'Lack of kNowledge in approaching the extension offcers'
 'Lack of communication' 'County government has Not yet employed any '
 'Not accessible'
 'The area where I come from has No agricultural practice, it is purely livestock keepin The only services we g
et is from veterinary officers for livestock.']
Unique values in 'Challenges faced': ['yes ' 'Yes ' 'No ' 'No']
Unique values in 'Group of marketers': ['No' 'Yes' 'None']
Unique values in ' Benefits of Group of marketers': ['None'
 'Controls the price\nSales outside the county at good price\nTransport for the agricultural products '
 'Through discussion you learn from them\nSharing ideas'
 'They assist me marketing my livestocks'
 'Contract market and pricing security' 'Financial support'
 'Help in distribution' 'For larger market'
 'Increases distribution of farm production'
 'Helped in reaching larger customers' 'Limited benefits']
Unique values in ' Reasons for not being in a group': ['No Groups of Marketers' 'No groups of livestock farmers
'
 'No Groups of Marketers ' 'Groups Not available'
 'Groups of marketers Not in place' 'No group of marketers'
 'Link to customers by myself - phone ' 'Financial crisis '
 ' Group dissolved and few members escaped with the money .'
 'No group of markets' 'No Markets.' 'Market Not available ' 'No market'
 'Always a ready market' 'There is always a ready market' 'No Marketers'
 'No group of Marketers' 'No group of markerters' 'Not a member'
 'Individual marketer' 'Lack of Knowledge' 'Sole entrepreneur'
 'No market linkages' 'Never participated']
Unique values in 'Access to extention services': ['No' 'Yes']
Unique values in 'Type of services Offered': ['None'
 'Trainings on modern farming\nProviding us with information\nAdvice how to apply fertilizer and other chemical
s on crops\nTraining on how to access financial from finance institutions'
 'Training \nExposure trips \nAdvice on how to apply fertilizer \nInformation on how to access loans from finan
cial institutions'
 'Trainings\nExposure trip.\nInformation.' 'New skills'
 'learn danger of green House gas to environment, learn tomatoes, sorghum and pastures timps.'
 'Crop husbandry practices , climate change'
 'How to manage crop and fodders'
 'Financial, stocking levels and Sacco as a marketing tool'
 'How to operate agricultural business'
 'KNowledge on how to manage livestock during drought'
 'How to run agricultural business'
 'Best crop and livestock production skills'
 'Gain skills on livestock management during drought'
 'How to operate farms' 'How to run livestock business'
 'How to manage agriculture' 'Value addition of crops'
 'How to manage livestock during drought' 'How to manage livestock'
 'Gain experience and skills' 'To manage livestock during drought'
 'Provide kNowledge on how to run livestock'
 'Acquire skills of managing livestock' 'Skills on managing livestock'
 'Good agricultural production practices' 'Farm produce'
 'Drought risk management']
Unique values in 'Reasons for not accessing Extension': ['Extension Officers unavailable' 'Lack of offices' 'Of
fices unavailable'
 'Livestock reside far from the country headquarter'
 'No information on  their services'
 "Well experience -don't need extension services" 'Lack of officers'
```

```
 'Seek private services' 'No extension service calenders or visits'
 'Not well connected' 'No connection'
 'Lack of information in approaching the extension offcers'
 'Lack of communication'
 'Only veterinary officers for livestock available.']
Unique values in 'Enjoying govt services': ['No' 'Yes']
Unique values in 'Types of govt services offered': ['Not availble'
 'Trainings free\nFree seeds and other farm inputs\nExposure trips sponsered by government'
 'By offering free training\nFree exposure trips outside the county '
 'Advice office on how to apply pesticides and other chemicals.\nAvailable new methods of farmin'
 'I enjoy government services in respect to lowering down the cost of inputs like fertilizers and also allowing
the importation of cheaper tools for farming g the plastic knapsack sprayer ,water cans ,jembes ,pangas t.c wat
er pumps and many others'
 'Through particular activities relation to livestock.'
 'Provision of subsidy' 'Provision of fertilizers'
 'Provision of fertilizer' 'Provide fertilizer' 'Agricultural fertilizer'
 'Provide fertilizer to the farmers' "Free service delivery's"
 'Provide farm inputs' 'Increased farm inputs' 'inputs' 'Good Management'
 'Good  agricultural Practices' 'Good Good  agricultural Practices'
 'For livestock services']
Unique values in 'Reasons for lack of  govt services': ['Policy unimplemented' ' Services unavailable'
 'Policy not adhered to by the department' 'Lack of offices'
 'Services unavailable' 'Not Aplicable'
 'The extension service provider are very few in my area'
 'Lack of motivation hence poor linkage'
 'Extension officer are very few in our sub-county'
 'Remote areas are Not covered' 'Need sensitization' 'Corruption'
 'Policy  unimplemented ']
Unique values in 'Insurance cover': ['No' 'No ']
Unique values in 'Challenges on Insurance': [' Lack of information on Insurance cover' 'Insurance cover unavail
able'
 ' Lack of information on Insurance cover;unavailable services'
 'Insurance unavailable '
 'Insurance cover unavailable;\n Lack of information on Insurance cover'
 ' No sensitization' 'Insurance Insurance cover unavailable'
 'Insurance cover unavailable '
 ' Lack of information on Insurance cover;Insurance cover unavailable'
 'No sensitization' 'Lack of Lack of information on Insurance cover'
 'Insurance cover unavailable available'
 'Insurance cover unavailables available' 'Cover Not applied to our area'
 'Insurance cover unavailables' 'Lack of information on Insurance cover'
 'Lack of information on Insurance cover;\nLimited insurance companies in our county '
 'Limited insurance companies in our county ;\nLack of information on Insurance cover'
 ' Expensive ' 'Lack of information on insurance cover for ' 'Expensive\n'
 'Insurance cover unavailable \nNo sensitization ' 'Hard to access'
 '\nLack of insurance offices' 'Insurance unavailable services '
 'Expensive;\nLack of information on insurance cover'
 'Expensive;\nHard to access'
 'Lack of shariah compliant insurance;Hard to access:Lack of information on insurance cover'
 'Not registered'
 'No sales ;Complex process of valuing livestock and properties'
 ' Not registered' 'Lack of Information'
 'Limited insurance companies in our county'
 'Insurance cover unavailable;No good insurance product  livestock;\nNo sensitization']
Unique values in 'Training Services': ['No' 'Yes']
Unique values in 'skills and knowledge obtained': ['Not available' 'Organic farming\nCommunal gardens'
 'How to prepare the ;shamba ,planting pesticideapplication; irrigation ,;weeding , harvesting, fertilizer appl
ication, identifying the pests and diseases'
 'Hydroponic farming'
 'Feeding habits;\nHousing layouts;\nVaccines programmes'
 'Farm planning and record keeping by AYA Africa young Africa agrientreprenur'
 'New skills ' 'New skills' 'Crop and livestock production' 'Veterinary'
 'Good agricultural practics;New technology'
 'LIvestock production best practices ;Training on risks management strategies'
 'Treatment and vaccination of livestock' 'Risk management ']
Unique values in ' Reasons for not engaging in Training': ['Lack of trainers' 'Not applicable']
```

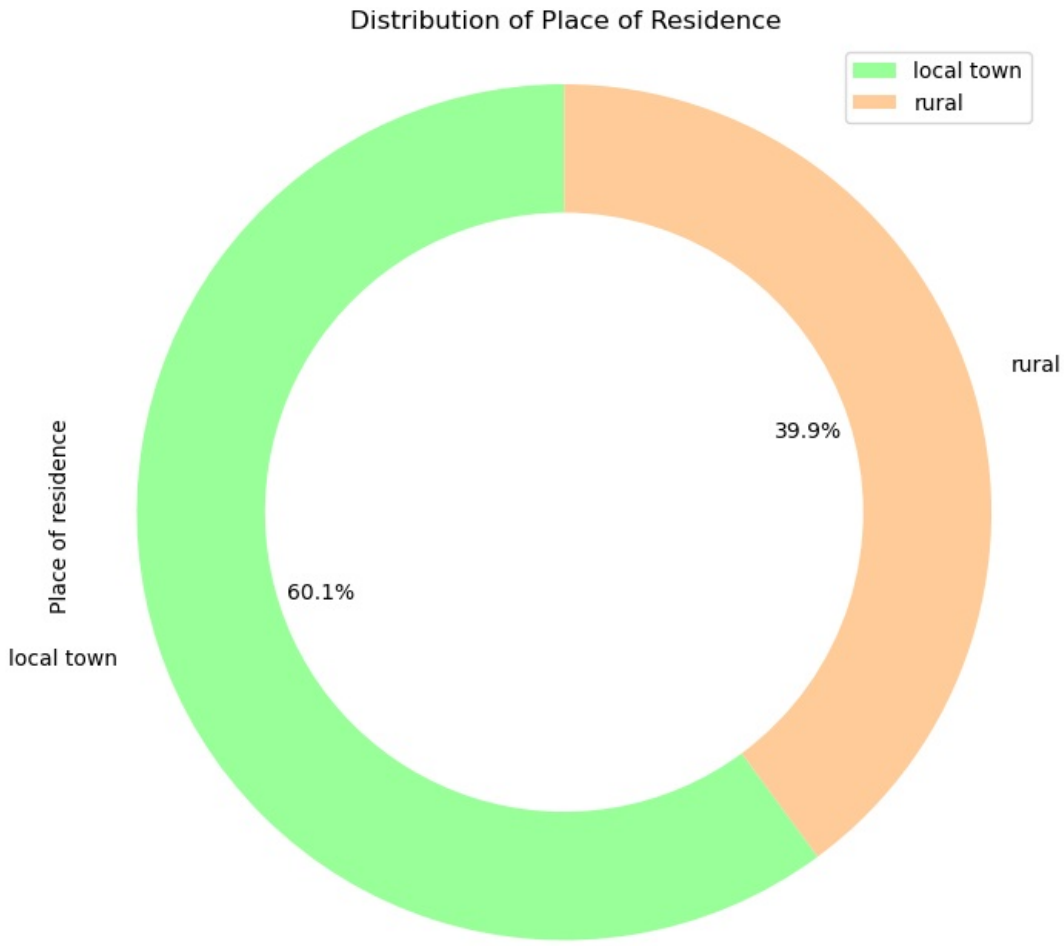
In [ ]:

In [49]:
```python
import matplotlib.pyplot as plt
# Plot

education_counts = df['Education'].value_counts()

# Plot bar graph
education_counts.plot(kind='bar', color='purple')

# Add labels and title
plt.xlabel('Education')
plt.ylabel('Count')
plt.title('Level of Education')

# Show the plot
plt.show()
```



In [50]:

```
residence_counts = df['Place of residence'].value_counts()

# Define colors
colors = ['#99ff99', '#ffcc99', '#ff9999']

# Plot pie chart
plt.figure(figsize=(8, 8))  # Adjust the figure size for better visibility
residence_counts.plot(kind='pie', autopct='%1.1f%%', startangle=90, colors=colors, wedgeprops=dict(width=0.3))

# Add title
plt.title('Distribution of Place of Residence')

# Add legend
plt.legend(labels=residence_counts.index, loc='upper right')

# Equal aspect ratio ensures that pie is drawn as a circle.
plt.axis('equal')

# Show the plot
plt.show()
```

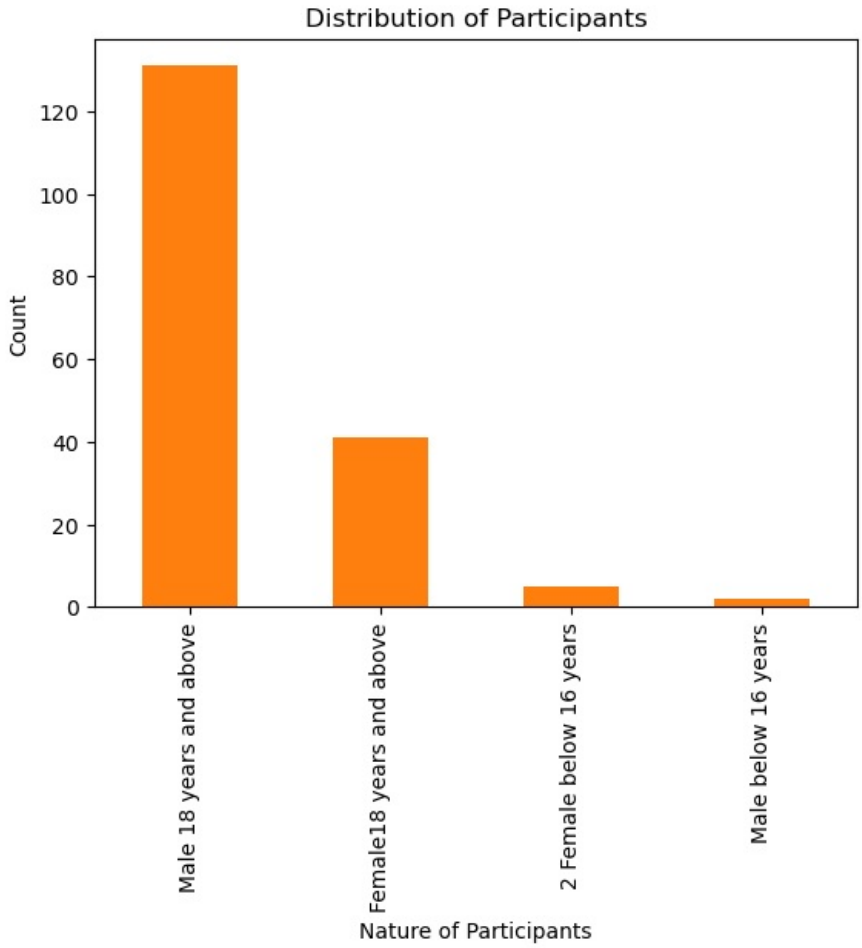


In [51]:
```
'#99ff99', '#ffcc99', '#ff9999'
```

Out[51]:
```
('#99ff99', '#ffcc99', '#ff9999')
```

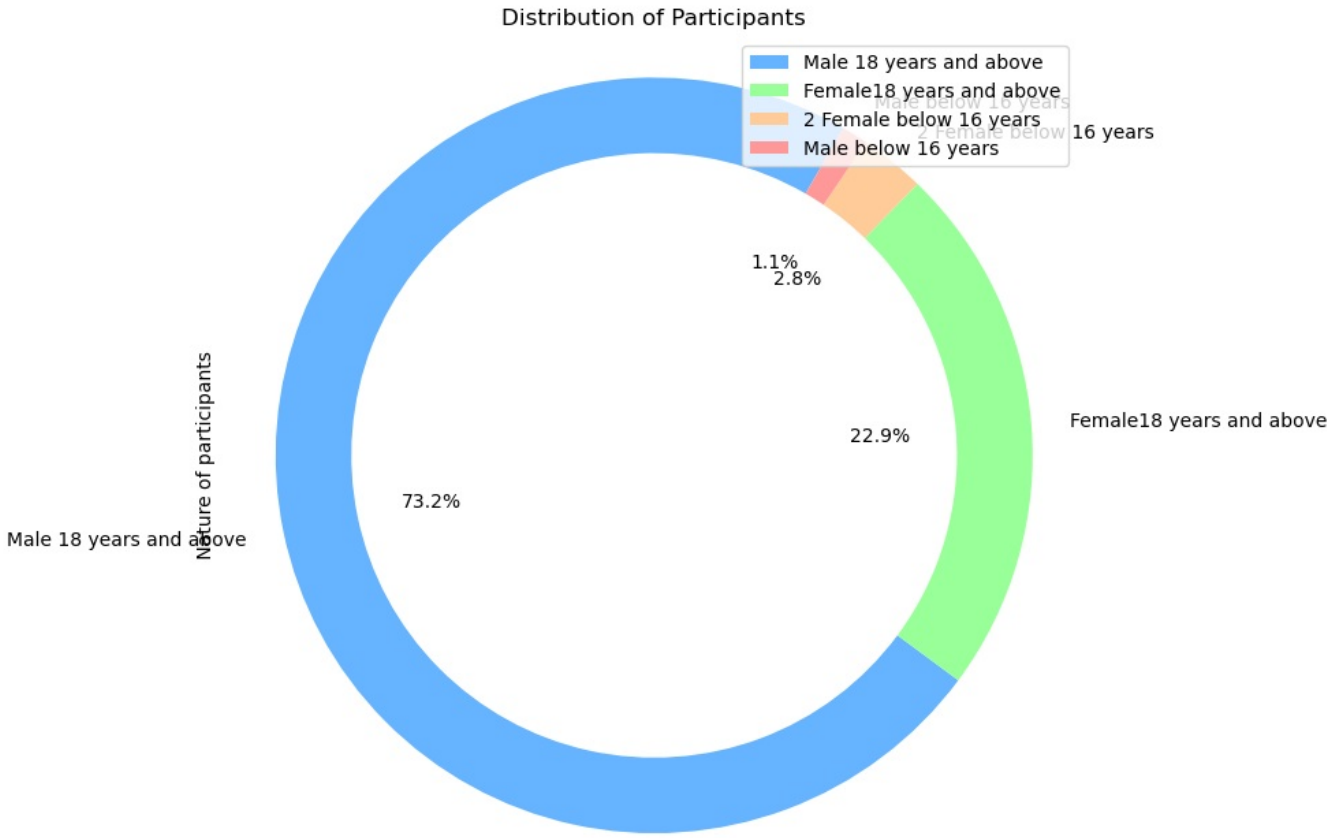
In [ ]:
```

```

In [52]:
```
Participants_Count = df[' Nature of participants'].value_counts()

# Plot bar graph
Participants_Count.plot(kind='bar', color='#ff7f0e')

# Add labels and title
plt.xlabel('Nature of Participants')
plt.ylabel('Count')
plt.title('Distribution of Participants')

# Show the plot
plt.show()
```



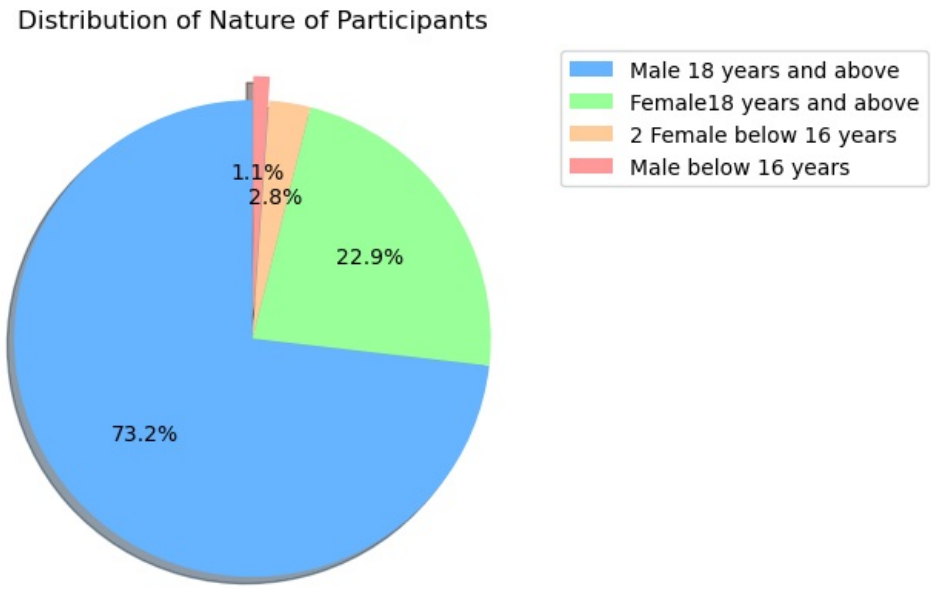
In [53]:

```
colors = ['#66b3ff', '#99ff99', '#ffcc99', '#ff9999']
Nature_participants= df[' Nature of participants'].value_counts()


# Plot pie chart
plt.figure(figsize= (8, 8))  # Adjust the figure size for better visibility
Nature_participants.plot(kind='pie', autopct='%1.1f%%', startangle=60, colors=colors, wedgeprops=dict(width=0.2

# Add title
plt.title('Distribution of Participants')

# Add legend
plt.legend(labels=Nature_participants.index, loc='upper right')

# Equal aspect ratio ensures that pie is drawn as a circle.
plt.axis('equal')

# Show the plot
plt.show()
```



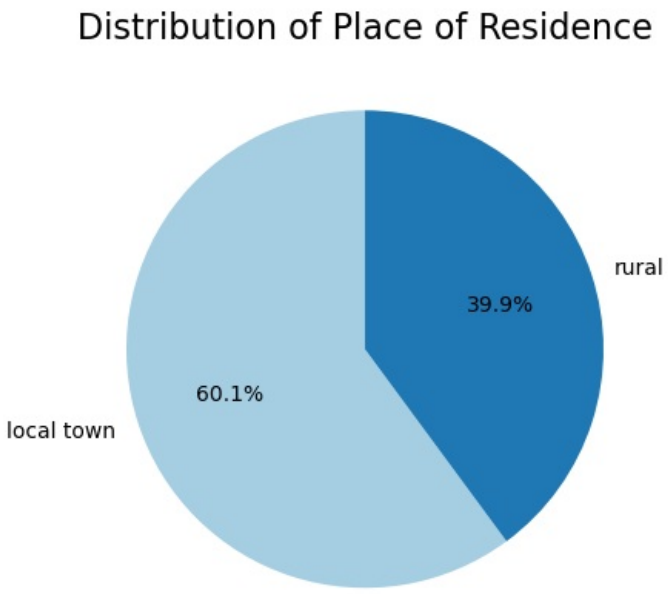
In [54]:

```
import matplotlib.pyplot as plt

# Count the occurrences of each category in 'Nature of participants'
participants_counts = df[' Nature of participants'].value_counts()

# Define custom colors
colors = ['#66b3ff', '#99ff99', '#ffcc99', '#ff9999']

# Explode the first slice for emphasis
explode = (0, 0, 0, 0.1)

# Create a pie chart
plt.figure(figsize=(5, 8))
plt.pie(participants_counts, labels=None, autopct='%1.1f%%', startangle=90, colors=colors, explode=explode, sha

# Add title and legends
plt.title('Distribution of Nature of Participants', fontsize=12)

# Create separate legends for each label
legend_labels = participants_counts.index
plt.legend(legend_labels, loc='upper left', bbox_to_anchor=(1, 1))

# Show the plot
plt.show()
```

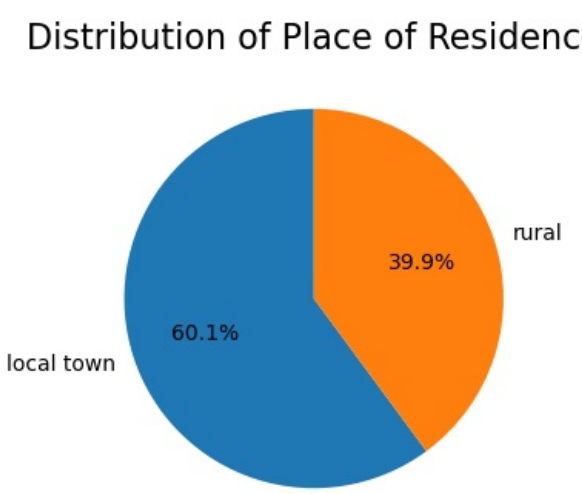


In [55]:
```
colors = ['#66b3ff', '#99ff99', '#ffcc99', '#ff9999']
```

In [56]:
```
residence_counts = df['Place of residence'].value_counts()

# Create a pie chart
plt.figure(figsize=(5, 8))
plt.pie(residence_counts, labels=residence_counts.index, autopct='%1.1f%%', startangle=90, colors=plt.cm.Paired

# Add title
plt.title('Distribution of Place of Residence', fontsize=16)

# Show the plot
plt.show()
```



In [57]:
```
residence_counts = df['Place of residence'].value_counts()

# Define custom colors
colors = ['#1f77b4', '#ff7f0e', '#2ca02c', '#d62728', '#9467bd', '#8c564b', '#e377c2', '#7f7f7f', '#bcbd22', '#

# Create a pie chart
plt.figure(figsize=(6, 4))
plt.pie(residence_counts, labels=residence_counts.index, autopct='%1.1f%%', startangle=90, colors=colors)

# Add title
plt.title('Distribution of Place of Residence', fontsize=16)

# Show the plot
plt.show()
```



In [58]:
```
'#1f77b4', '#ff7f0e', '#2ca02c', '#d62728', '#9467bd', '#8c564b', '#e377c2', '#7f7f7f', '#bcbd22', '#17becf'
```

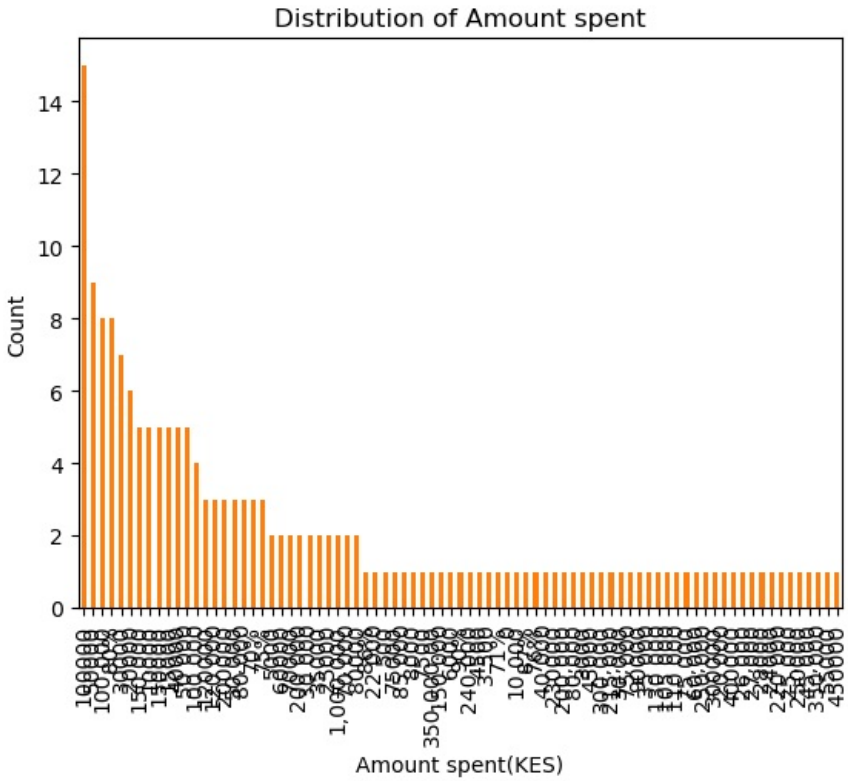
Out[58]:
```
('#1f77b4',
 '#ff7f0e',
 '#2ca02c',
 '#d62728',
 '#9467bd',
 '#8c564b',
 '#e377c2',
 '#7f7f7f',
 '#bcbd22',
 '#17becf')
```

In [59]:
```
# https://htmlcolorcodes.com/.
```

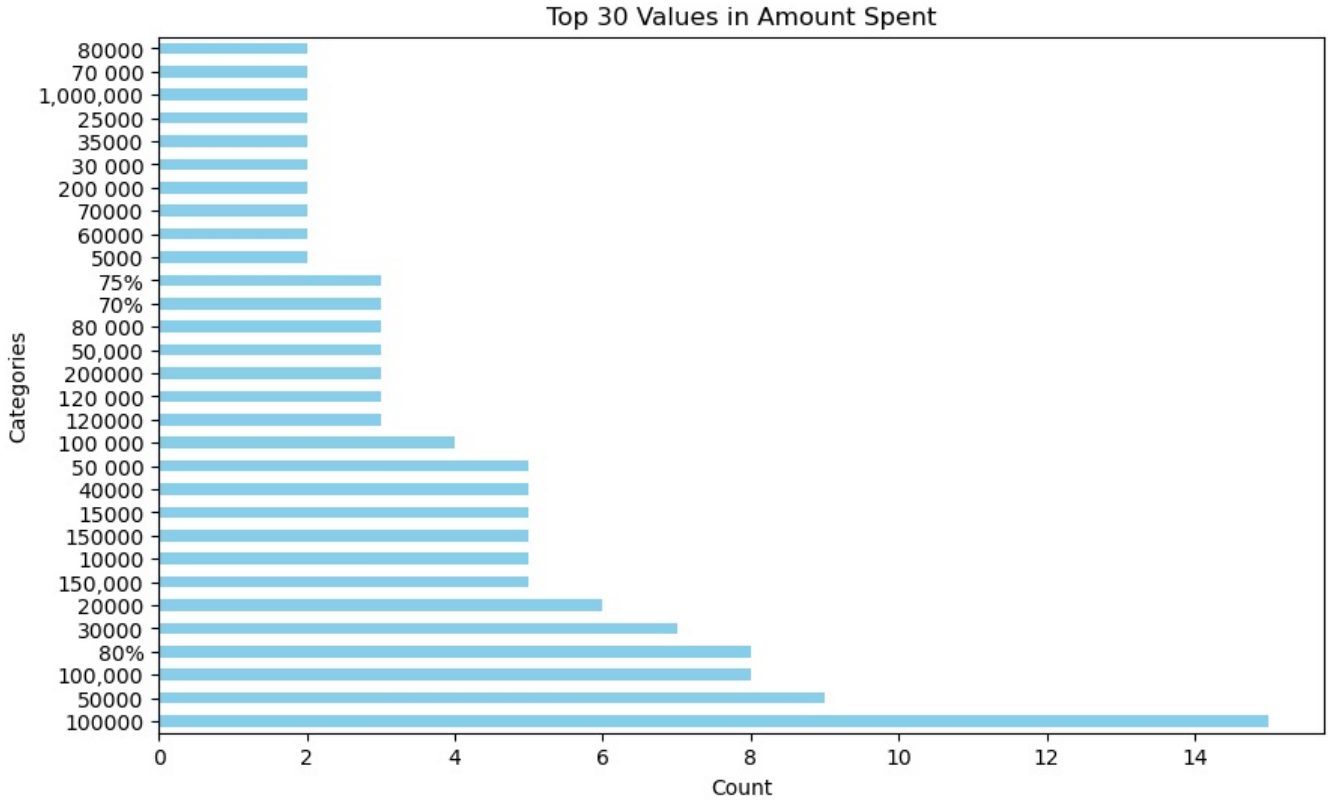
In [60]:
```
'Amount spent(KES)'
```

Out[60]:
```
'Amount spent(KES)'
```

In [61]:
```
Amount_spent = df['Amount spent(KES)'].value_counts()

# Plot bar graph
Amount_spent.plot(kind='bar', color='#ff7f0e')

# Add labels and title
plt.xlabel('Amount spent(KES)')
plt.ylabel('Count')
plt.title('Distribution of Amount spent')

# Show the plot
plt.show()
```

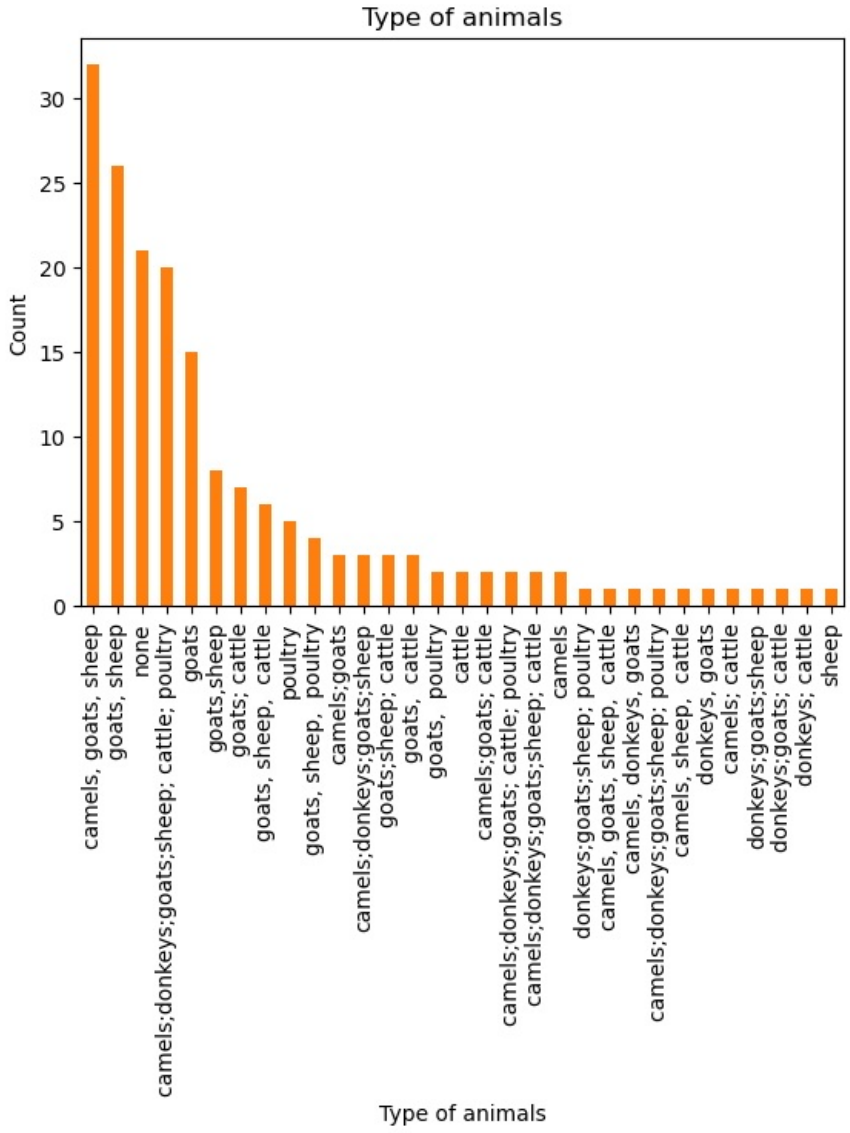


In [62]:
```
top_n = 30
# Get the top N values
top_values = df['Amount spent(KES)'].value_counts().nlargest(top_n)

# Plot horizontal bar graph
plt.figure(figsize=(10, 6))
top_values.plot(kind='barh', color='skyblue')
plt.xlabel('Count')
plt.ylabel('Categories')
plt.title(f'Top {top_n} Values in Amount Spent')
plt.show()
```



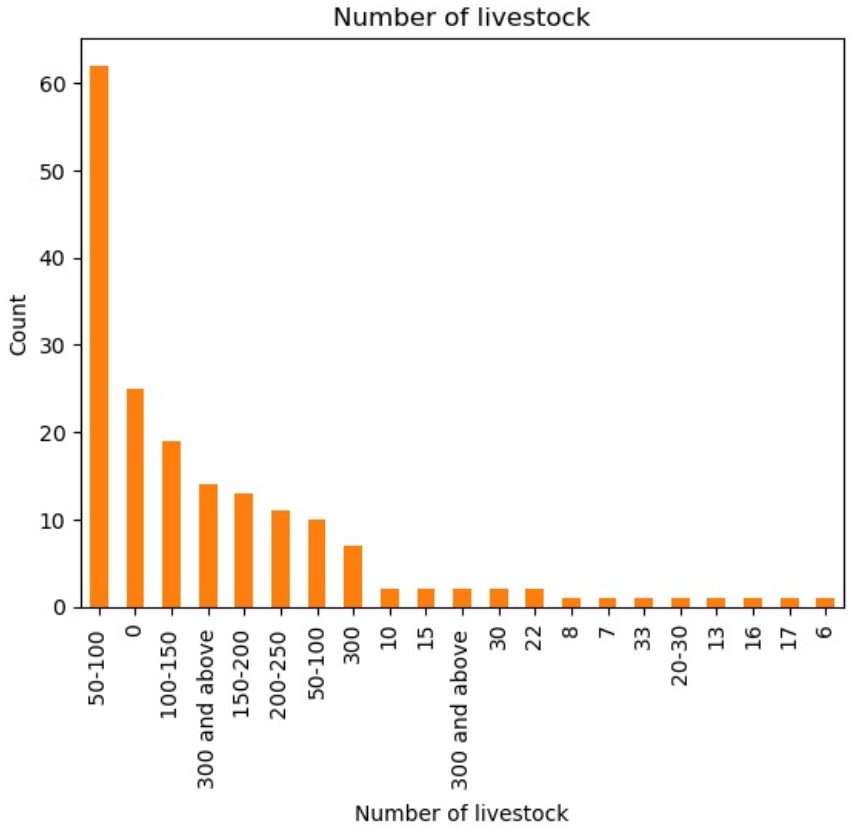
In [63]:
```
from wordcloud import WordCloud
import matplotlib.pyplot as plt

animals = ('Camels', 'Camels, Goats, Sheep', 'Donkeys, Goats', 'Cattle',
           'Camels, Donkeys, Goats', 'Camels, Goats, Sheep, Cattle', 'None',
           'Camels, Sheep, Cattle', 'Goats, Sheep, Cattle',
           'Goats, Cattle', 'Goats, Poultry', 'Goats, Sheep, Poultry', 'Goats',
           'Poultry', 'Sheep', 'Camels;Donkeys;Goats;Sheep;Cattle;Poultry',
           'Camels;Donkeys;Goats;Sheep;Cattle', 'Donkeys;Goats;Sheep;Poultry',
           'Camels;Donkeys;Goats;Sheep', 'Goats;Cattle',
           'Camels;Donkeys;Goats;Sheep;Poultry',
           'Camels;Donkeys;Goats;Cattle;Poultry', 'Camels;Goats;Cattle',
           'Goats;Sheep', 'Camels;Goats', 'Camels;Cattle', 'Donkeys;Goats;Sheep',
           'Donkeys;Goats;Cattle', 'Donkeys;Cattle', 'Goats;Sheep;Cattle')

# Concatenate the animal names
text = ' '.join(animals)

# Generate word cloud
wordcloud = WordCloud(width=900, height=400, background_color='white').generate(text)

# Plot the WordCloud image
plt.figure(figsize=(10, 5))
plt.imshow(wordcloud, interpolation='bilinear')
plt.axis('off')  # Turn off axis labels
plt.show()
```

In [64]:
```
Type_animals = df['Type of animals'].value_counts()

# Plot bar graph
Type_animals.plot(kind='bar', color='#ff7f0e')

# Add labels and title
plt.xlabel('Type of animals')
plt.ylabel('Count')
plt.title('Type of animals')

# Show the plot
plt.show()
```

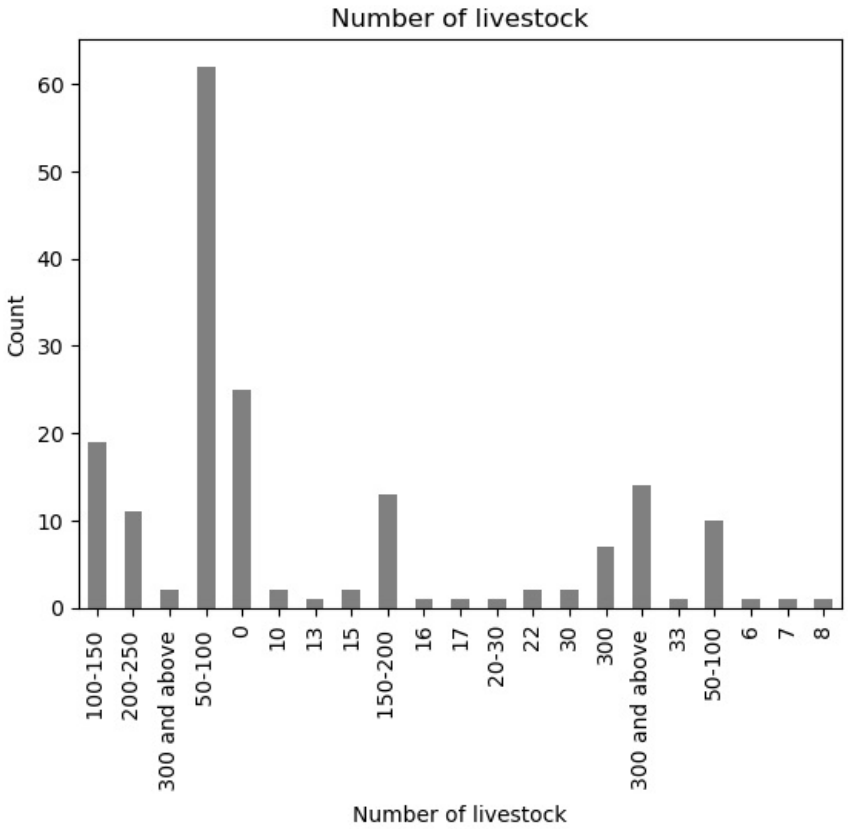


In [67]:
```
Type_animals = df['Number of livestock'].value_counts()

# Plot bar graph
Type_animals.plot(kind='bar', color='#ff7f0e')
```

```
# Add labels and title
plt.xlabel('Number of livestock')
plt.ylabel('Count')
plt.title('Number of livestock')

# Show the plot
plt.show()
```



In [73]:
```
import matplotlib.pyplot as plt


df_sorted = df['Number of livestock'].value_counts().sort_index()

# Plot bar graph
df_sorted.plot(kind='bar', color='grey')

# Add labels and title
plt.xlabel('Number of livestock')
plt.ylabel('Count')
plt.title('Number of livestock')

# Show the plot
plt.show()
```



In [ ]:

In [ ]: