# Django Forms – Field Types, Arguments, and Widgets at last we have complete code every thing in that

# Code 29

# Video 35

Django provides a powerful **Forms API** to handle user input in a structured, validated, and secure way.

Forms are mainly composed of:

1. **Fields** → Define what type of input is required (text, email, date, etc.)
2. **Arguments** → Configure field behavior (label, required, help\_text, validators, error messages, etc.)
3. **Widgets** → Control how the field is rendered in HTML (<input>, <textarea>, <select>, etc.)

## 🔹 1. Field Types in Django Forms

Field types map to specific kinds of data.  
Here’s an overview with **examples and use-cases**:

**from** django **import** forms

class **DemoForm**(*forms***.***Form*)**:**

*# ---- Basic Fields ----*

    name **=** forms**.**CharField()                 *# Text input*

    email **=** forms**.**EmailField()               *# Validates proper email format*

    pin\_code **=** forms**.**IntegerField()          *# Numeric integer input*

*# ---- Numeric & Date/Time Fields ----*

    age **=** forms**.**FloatField()                 *# Float values (decimal with no fixed places)*

    date\_of\_birth **=** forms**.**DateField()        *# Input for a date (YYYY-MM-DD)*

    appointment\_time **=** forms**.**TimeField()     *# Input for a time (HH:MM:SS)*

    appointment\_datetime **=** forms**.**DateTimeField()  *# Input for both date and time*

*# ---- Boolean Fields ----*

    is\_subscribed **=** forms**.**BooleanField()     *# Checkbox: True/False*

    agree\_terms **=** forms**.**NullBooleanField()   *# Dropdown: Yes/No/Unknown*

*# ---- Choice Fields ----*

    gender **=** forms**.**ChoiceField(**choices=**[('M'**,** 'Male')**,** ('F'**,** 'Female')])

    interests **=** forms**.**MultipleChoiceField(

**choices=**[('tech'**,** 'Technology')**,** ('art'**,** 'Art')]**,**

    )   *# Multi-select dropdown*

*# ---- File and URL Fields ----*

    profile\_image **=** forms**.**ImageField()       *# Upload image files*

    resume **=** forms**.**FileField()               *# Upload general files*

    website **=** forms**.**URLField()               *# Must be a valid URL (http/https)*

*# ---- Specialized Fields ----*

    phone\_number **=** forms**.**RegexField(**regex=**r'^\+**?**1**?**\d**{9,15}**$')  *# Regex validation*

    password **=** forms**.**CharField(**widget=**forms**.**PasswordInput())   *# Masked input*

    slug **=** forms**.**SlugField()                 *# Slug text (letters, numbers, hyphens, underscores)*

    ip\_address **=** forms**.**GenericIPAddressField()  *# IPv4 / IPv6*

    rating **=** forms**.**DecimalField()            *# Fixed decimal precision*

👉 **Why so many field types?**  
Because each field type:

* Validates input automatically (EmailField rejects non-email text, IntegerField rejects letters).
* Provides correct default widget (CharField → TextInput, EmailField → EmailInput, etc.).

## 🔹 2. Field Arguments (Configuring Fields)

Every field type accepts **arguments** to customize validation, labels, defaults, etc.

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**from** django**.**core**.**validators **import** MinLengthValidator

class **DemoForm**(*forms***.***Form*)**:**

    name **=** forms**.**CharField(

**label=**"Full Name"**,**                   *# Custom label instead of "Name"*

**max\_length=**100**,**                      *# Maximum allowed characters*

**label\_suffix=**":"**,**                    *# Add ':' after label*

**initial=**"Enter your full name"**,**      *# Pre-filled value*

**help\_text=**"Enter your legal name here"**,**  *# Guidance message below field*

**validators=**[MinLengthValidator(3)]**,**  *# Custom validator*

    )

    email **=** forms**.**EmailField(

**label=**"Email Address"**,**

**disabled=**True**,**                       *# Makes the field read-only*

    )

    pin\_code **=** forms**.**IntegerField(

**label=**"Pin Code"**,**

**min\_value=**100000**,**                    *# Minimum allowed value*

**max\_value=**999999**,**                    *# Maximum allowed value*

**error\_messages=**{                     *# Custom validation errors*

            'min\_value'**:** 'Pin code must be at least 6 digits.'**,**

            'max\_value'**:** 'Pin code can be at most 6 digits.'**,**

        }

    )

    rating **=** forms**.**DecimalField(

**label=**"Rating"**,**

**max\_digits=**3**,**                        *# Total digits (e.g. 9.5)*

**decimal\_places=**1**,**                    *# Decimal precision*

**min\_value=**0**,**

**max\_value=**10**,**

**initial=**5.0**,**                         *# Pre-filled value*

**help\_text=**"Provide a rating between 0 and 10"**,**

**localize=**True**,**                       *# Format according to locale*

    )

👉 **Why arguments?**  
They make forms reusable and professional: set **validation rules**, **user guidance**, and **custom error messages** directly at the field level.

## 🔹 3. Widgets (Controlling HTML Rendering)

Each field is rendered with a **widget**.

* Widgets generate the actual HTML (<input>, <textarea>, <select>, etc.).
* You can customize them using attrs for CSS classes, placeholders, id, min/max, etc.

### Common Widgets

python

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class **DemoForm**(*forms***.***Form*)**:**

*# ---- Text Inputs ----*

    name **=** forms**.**CharField(

**widget=**forms**.**TextInput(**attrs=**{'placeholder'**:** 'Type here...'**,** 'class'**:** 'form-control'})

    )

    password **=** forms**.**CharField(

**widget=**forms**.**PasswordInput(**attrs=**{'placeholder'**:** 'Enter password'})

    )

    hidden\_key **=** forms**.**CharField(**widget=**forms**.**HiddenInput())   *# Hidden field*

*# ---- Email, URL, Number ----*

    email **=** forms**.**EmailField(**widget=**forms**.**EmailInput(**attrs=**{'placeholder'**:** 'name@example.com'}))

    website **=** forms**.**URLField(**widget=**forms**.**URLInput(**attrs=**{'placeholder'**:** 'https://example.com'}))

    pin\_code **=** forms**.**IntegerField(**widget=**forms**.**NumberInput(**attrs=**{'min'**:** '100000'**,** 'max'**:** '999999'}))

*# ---- Date/Time ----*

    DOB **=** forms**.**DateField(**widget=**forms**.**DateInput(**attrs=**{'type'**:** 'date'}))

    meeting\_time **=** forms**.**TimeField(**widget=**forms**.**TimeInput(**attrs=**{'type'**:** 'time'}))

    datetime\_field **=** forms**.**DateTimeField(**widget=**forms**.**DateTimeInput(**attrs=**{'type'**:** 'datetime-local'}))

*# ---- Textarea ----*

    content **=** forms**.**CharField(**widget=**forms**.**Textarea(**attrs=**{'rows'**:** 5**,** 'placeholder'**:** 'Write here...'}))

*# ---- Boolean (Checkbox / Dropdown) ----*

    subscribed **=** forms**.**BooleanField(**widget=**forms**.**CheckboxInput())

    agree\_terms **=** forms**.**NullBooleanField(**widget=**forms**.**NullBooleanSelect())

*# ---- Select / Multi-select / Radio ----*

    gender **=** forms**.**ChoiceField(**choices=**[('M'**,** 'Male')**,** ('F'**,** 'Female')]**,** **widget=**forms**.**Select())

    interests **=** forms**.**MultipleChoiceField(**choices=**[('tech'**,** 'Tech')**,** ('art'**,** 'Art')]**,** **widget=**forms**.**SelectMultiple())

    gender\_radio **=** forms**.**ChoiceField(**choices=**[('M'**,** 'Male')**,** ('F'**,** 'Female')]**,** **widget=**forms**.**RadioSelect())

*# ---- File / Image Upload ----*

    resume **=** forms**.**FileField(**widget=**forms**.**FileInput())

    profile\_image **=** forms**.**ImageField(**widget=**forms**.**ClearableFileInput())  *# adds "Clear" option*

*# ---- Specialized Widgets ----*

    slug **=** forms**.**SlugField(**widget=**forms**.**TextInput(**attrs=**{'placeholder'**:** 'my-slug'}))

    ip\_address **=** forms**.**GenericIPAddressField(**widget=**forms**.**TextInput(**attrs=**{'placeholder'**:** '127.0.0.1'}))

    duration **=** forms**.**DurationField(**widget=**forms**.**TextInput(**attrs=**{'placeholder'**:** 'hh:mm:ss'}))

    rating **=** forms**.**DecimalField(**widget=**forms**.**NumberInput(**attrs=**{'step'**:** '0.1'}))

*# ---- MultiWidgets (Composite Widgets) ----*

    split\_datetime **=** forms**.**SplitDateTimeField(**widget=**forms**.**SplitDateTimeWidget())   *# date + time separately*

    hidden\_split\_datetime **=** forms**.**SplitDateTimeField(**widget=**forms**.**SplitHiddenDateTimeWidget())  *# hidden inputs*

👉 **Why use widgets?**  
Because they allow **full control of HTML rendering** (Bootstrap/Tailwind integration, placeholders, accessibility attributes, etc.).

## 🔹 4. Why This Matters in Real Projects

* **Better UX:** Add placeholders, CSS classes, min/max, help\_text for guidance.
* **Stronger Validation:** Prevents invalid input before hitting database.
* **Reusability:** Same form class works across multiple templates.
* **Security:** Handles HTML escaping, CSRF protection, password masking.
* **Dynamic Rendering:** Widgets allow you to control everything without rewriting HTML.

## 🔹 5. Quick Summary (Keywords)

•   Field Types**:** CharField**,** EmailField**,** IntegerField**,** BooleanField**,** ChoiceField**,** FileField**,** ImageField**,** SlugField**,** GenericIPAddressField**,** DecimalField**,** DateField**,** TimeField**,** DateTimeField**,** RegexField**,** etc**.**

•   Arguments**:** label**,** label\_suffix**,** initial**,** help\_text**,** validators**,** required**,** disabled**,** min\_value**,** max\_value**,** max\_length**,** error\_messages**,** localize**.**

•   Widgets**:** TextInput**,** PasswordInput**,** HiddenInput**,** EmailInput**,** URLInput**,** NumberInput**,** DateInput**,** TimeInput**,** DateTimeInput**,** Textarea**,** CheckboxInput**,** NullBooleanSelect**,** Select**,** SelectMultiple**,** RadioSelect**,** FileInput**,** ClearableFileInput**,** SplitDateTimeWidget**,** SplitHiddenDateTimeWidget**.**

Complete code :

**from** django **import** forms

**from** django**.**core**.**validators **import** MinLengthValidator**,** RegexValidator

GENDER\_CHOICES **=** [

    ('Male'**,** 'Male')**,**

    ('Female'**,** 'Female')**,**

    ('Other'**,** 'Other')

]

INTERESTS\_CHOICES **=** [

    ('tech'**,** 'Technology')**,**

    ('art'**,** 'Art')**,**

    ('sports'**,** 'Sports')

]

*# Field Type Examples*

class **DemoForm**(*forms***.***Form*)**:**

*# Basic Fields*

    name **=** forms**.**CharField()

    email **=** forms**.**EmailField()

    pin\_code **=** forms**.**IntegerField()

*# Additional Field Types*

    age **=** forms**.**FloatField()

    date\_of\_birth **=** forms**.**DateField()

    appointment\_time **=** forms**.**TimeField()

    appointment\_datetime **=** forms**.**DateTimeField()

    is\_subscribed **=** forms**.**BooleanField()

    agree\_terms **=** forms**.**NullBooleanField()

*# Choice Fields*

    gender **=** forms**.**ChoiceField(**choices=**GENDER\_CHOICES)

    interests **=** forms**.**MultipleChoiceField(**choices=**INTERESTS\_CHOICES)

*# File and URL Fields*

    profile\_image **=** forms**.**ImageField()

    resume **=** forms**.**FileField()

    website **=** forms**.**URLField()

*# Other Specialized Fields*

    phone\_number **=** forms**.**RegexField(**regex=**r'^\+**?**1**?**\d**{9,15}**$')

    password **=** forms**.**CharField(**widget=**forms**.**PasswordInput())

    slug **=** forms**.**SlugField()

    ip\_address **=** forms**.**GenericIPAddressField()

    rating **=** forms**.**DecimalField()

*# Field Arguments Example*

class **DemoForm**(*forms***.***Form*)**:**

*# Basic Fields*

    name **=** forms**.**CharField(

**label=**"Full Name"**,**              *# Sets label displayed next to the field*

**max\_length=**100**,**                 *# Limits input length to 100 characters*

**label\_suffix=**":"**,**               *# Sets the suffix after the label (default is ':')*

**initial=**"Enter your full name"**,** *# Sets an initial placeholder value*

**help\_text=**"Enter your legal name here"**,**  *# Provides guidance for the user*

**validators=**[MinLengthValidator(3)]        *# Validates that input has at least 3 characters*

    )

    email **=** forms**.**EmailField(

**label=**"Email Address"**,**        *# Sets a user-friendly label for this email field*

**disabled=**True**,**                 *# Disables field input (useful for readonly fields)*

    )

    pin\_code **=** forms**.**IntegerField(

**label=**"Pin Code"**,**             *# Sets the field label*

**min\_value=**100000**,**              *# Ensures minimum value is 100000*

**max\_value=**999999**,**              *# Ensures maximum value is 999999*

**error\_messages=**{               *# Custom error messages*

            'min\_value'**:** 'Pin code must be at least 6 digits.'**,**

            'max\_value'**:** 'Pin code can be at most 6 digits.'

        }

    )

*# Additional Field Types*

    age **=** forms**.**FloatField(

**label=**"Age"**,**                  *# Sets the label for the age field*

**min\_value=**0                   *# Ensures a non-negative age*

    )

    date\_of\_birth **=** forms**.**DateField(

**label=**"Date of Birth"**,**        *# Sets label for date field*

**required=**False**,**                *# Field is optional*

**help\_text=**"Enter your birth date in YYYY-MM-DD format"

    )

    appointment\_time **=** forms**.**TimeField(

**label=**"Appointment Time"**,**     *# Sets label for time field*

**required=**False                 *# Field is optional*

    )

    appointment\_datetime **=** forms**.**DateTimeField(

**label=**"Appointment Date & Time"**,**  *# Sets label for datetime field*

**required=**False                 *# Field is optional*

    )

    is\_subscribed **=** forms**.**BooleanField(

**label=**"Subscribe to Newsletter"**,**  *# Sets label for boolean field*

**required=**False                 *# Field is optional*

    )

    agree\_terms **=** forms**.**NullBooleanField(

**label=**"Do you agree with terms?"  *# Sets label for a three-state boolean field*

    )

*# Choice Fields*

    gender **=** forms**.**ChoiceField(

**label=**"Gender"**,**

**choices=**GENDER\_CHOICES

    )

    interests **=** forms**.**MultipleChoiceField(

**label=**"Interests"**,**

**choices=**INTERESTS\_CHOICES**,**

**required=**False

    )

*# File and URL Fields*

    profile\_image **=** forms**.**ImageField(

**label=**"Profile Image"**,**

**required=**False

    )

    resume **=** forms**.**FileField(

**label=**"Upload Resume"**,**

**required=**False

    )

    website **=** forms**.**URLField(

**label=**"Personal Website"**,**

**required=**False

    )

*# Other Specialized Fields*

    phone\_number **=** forms**.**RegexField(

**label=**"Phone Number"**,**

**regex=**r'^\+**?**1**?**\d**{9,15}**$'**,**

**error\_messages=**{

            'invalid'**:** 'Enter a valid phone number, e.g., +123456789.'

        }

    )

    password **=** forms**.**CharField(

**label=**"Password"**,**

**max\_length=**50**,**

**widget=**forms**.**PasswordInput()**,**

**validators=**[MinLengthValidator(8)]**,**

**error\_messages=**{

            'min\_length'**:** 'Password must be at least 8 characters long.'

        }

    )

    slug **=** forms**.**SlugField(

**label=**"Slug"**,**

**max\_length=**50

    )

    ip\_address **=** forms**.**GenericIPAddressField(

**label=**"IP Address"**,**

**protocol=**'both'**,**

**unpack\_ipv4=**False**,**

**localize=**True**,**

    )

    rating **=** forms**.**DecimalField(

**label=**"Rating"**,**

**max\_digits=**3**,**

**decimal\_places=**1**,**

**min\_value=**0**,**

**max\_value=**10**,**

**initial=**5.0**,**

**help\_text=**"Provide a rating between 0 and 10"**,**

**localize=**True

    )

*# Widget Example*

class **DemoForm**(*forms***.***Form*)**:**

*# Text Input Widgets*

    name **=** forms**.**CharField(

**widget=**forms**.**TextInput(

**attrs=**{'placeholder'**:** 'Type here...'**,** 'class'**:** 'mycss'}

        )

    )

    password **=** forms**.**CharField(

**widget=**forms**.**PasswordInput(

**attrs=**{'placeholder'**:** 'Enter password'}

        )

    )

    key **=** forms**.**CharField(

**widget=**forms**.**HiddenInput()

    )

    email **=** forms**.**EmailField(

**widget=**forms**.**EmailInput(

**attrs=**{'placeholder'**:** 'name@example.com'}

        )

    )

    URL **=** forms**.**URLField(

**widget=**forms**.**URLInput(

**attrs=**{'placeholder'**:** 'https://example.com'}

        )

    )

    pin\_code **=** forms**.**IntegerField(

**widget=**forms**.**NumberInput(**attrs=**{'min'**:** '0'**,** 'max'**:** '100'})

    )

    DOB **=** forms**.**DateField(

**widget=**forms**.**DateInput(

**attrs=**{'type'**:** 'date'**,** 'placeholder'**:** 'YYYY-MM-DD'}

        )

    )

    meeting\_time **=** forms**.**TimeField(

**widget=**forms**.**TimeInput(

**attrs=**{'type'**:** 'time'**,** 'placeholder'**:** 'HH:MM:SS'}

        )

    )

    datetime\_field **=** forms**.**DateTimeField(

**label=**"DateTime Field"**,**

**widget=**forms**.**DateTimeInput(

**attrs=**{'type'**:** 'datetime-local'**,** 'placeholder'**:** 'YYYY-MM-DD HH:MM:SS'}

        )

    )

*# Textarea Widget*

    post\_content **=** forms**.**CharField(

**widget=**forms**.**Textarea(

**attrs=**{'placeholder'**:** 'Enter multiple lines of text...'}

        )

    )

*# Checkbox Widgets*

    boolean\_field **=** forms**.**BooleanField(

**label=**"Boolean Field"**,**

**widget=**forms**.**CheckboxInput()

    )

    null\_boolean\_field **=** forms**.**NullBooleanField(

**label=**"Null Boolean Field"**,**

**widget=**forms**.**NullBooleanSelect()

    )

*# Select Widgets*

    choice\_field **=** forms**.**ChoiceField(

**label=**"Choice Field"**,**

**choices=**GENDER\_CHOICES**,**

**widget=**forms**.**Select()

    )

    multiple\_choice\_field **=** forms**.**MultipleChoiceField(

**label=**"Multiple Choice Field"**,**

**choices=**INTERESTS\_CHOICES**,**

**widget=**forms**.**SelectMultiple()

    )

    radio\_choice\_field **=** forms**.**ChoiceField(

**label=**"Radio Choice Field"**,**

**choices=**GENDER\_CHOICES**,**

**widget=**forms**.**RadioSelect()

    )

*# File Upload Widgets*

    file\_field **=** forms**.**FileField(

**label=**"File Field"**,**

**widget=**forms**.**FileInput()

    )

    image\_field **=** forms**.**ImageField(

**label=**"Image Field"**,**

**widget=**forms**.**ClearableFileInput()

    )

*# Other Specialized Widgets*

    slug\_field **=** forms**.**SlugField(

**label=**"Slug Field"**,**

**widget=**forms**.**TextInput(**attrs=**{'placeholder'**:** 'my-slug'})

    )

    ip\_address\_field **=** forms**.**GenericIPAddressField(

**label=**"IP Address Field"**,**

**widget=**forms**.**TextInput(**attrs=**{'placeholder'**:** '127.0.0.1'})

    )

    time\_duration\_field **=** forms**.**DurationField(

**label=**"Duration Field"**,**

**widget=**forms**.**TextInput(**attrs=**{'placeholder'**:** 'hh:mm:ss'})

    )

    decimal\_field **=** forms**.**DecimalField(

**label=**"Decimal Field"**,**

**max\_digits=**5**,**

**decimal\_places=**2**,**

**widget=**forms**.**NumberInput(**attrs=**{'step'**:** '0.1'})

    )

*# MultiWidgets*

    split\_date\_time **=** forms**.**SplitDateTimeField(

**label=**"Split Date and Time Field"**,**

**widget=**forms**.**SplitDateTimeWidget()

    )

    split\_hidden\_date\_time **=** forms**.**SplitDateTimeField(

**label=**"Hidden DateTime Field"**,**

**widget=**forms**.**SplitHiddenDateTimeWidget()

    )