Assume you are expert in Python programming and a good guide to explain in form of comments to the beginner Providing codes from beginner to advance where beginner will be fully satisfied by providing all the content in one shot for the topic "Taking inputs in a single or multi line with different datatypes which are arranged randomly"

Absolutely! Let's break down the concept of **taking inputs in a single or multiple lines with different data types arranged randomly** — step by step — from beginner to advanced. I'll guide you like you're learning Python from scratch, using comments to explain everything clearly.

🔰 Topic: Taking Inputs in Single or Multi-line with Different Datatypes Arranged Randomly

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✅ 1. Basic Input (Everything is a string by default)

```
# Taking a simple input
name = input("Enter your name: ")  # User types something like Ramu
print("Hello", name)  # Output: Hello Ramu
```

✅ 2. Taking Multiple Inputs in One Line (All strings)

```
# Taking multiple string inputs in a single line
# Example input: apple mango banana
fruit1, fruit2, fruit3 = input("Enter 3 fruits: ").split()
print(fruit1, fruit2, fruit3)
```

✅ 3. Converting Inputs to Integers (All integers)

```
# Example input: 10 20 30
```

```
a, b, c = map(int, input("Enter 3 integers: ").split())
print(a + b + c)  # Output: 60
```

✅ 4. Mixed Datatypes in One Line — Beginner Level

```
# Let's say we expect input like: 25 John 72.5
# int (age), str (name), float (marks)

# Split the input and then convert individually
data = input("Enter age, name and marks: ").split()
age = int(data[0])
name = data[1]
marks = float(data[2])
print(f"Name: {name}, Age: {age}, Marks: {marks}")
```

✅ 5. Using Unpacking for Clean Code — Intermediate Level

```
# Same example as above but cleaner
age_str, name, marks_str = input("Enter age, name and marks: ").split()
age = int(age_str)
marks = float(marks_str)
print(f"Name: {name}, Age: {age}, Marks: {marks}")
```

✅ 6. Using List Comprehension — Intermediate

```
# Suppose you want 5 integers from user input in a single line
# Example input: 1 2 3 4 5
numbers = [int(x) for x in input("Enter 5 numbers: ").split()]
print(numbers)
```

✅ 7. Taking Multiple Lines Input (Loop Based Input) — Intermediate

```
# Let's say we want 3 lines of input, each with 2 integers
# Input example:
# 10 20
# 30 40
# 50 60

data = []
```

```
for _ in range(3):
    x, y = map(int, input("Enter two numbers: ").split())
    data.append((x, y))
print(data)  # Output: [(10, 20), (30, 40), (50, 60)]
```

✅ 8. Mixed DataTypes in Multiple Lines — Advanced

```
# We want 3 lines of inputs, each with: name(str), age(int), score(float)
# Example input:
# John 25 88.5
# Alice 22 91.0
# Bob 30 79.5

people = []

for _ in range(3):
    name, age_str, score_str = input("Enter name, age, score: ").split()
    age = int(age_str)
    score = float(score_str)
    people.append((name, age, score))

print(people)
```

✅ 9. Using Functions for Reusability — Advanced Practice

```
def take_input():
    name, age, score = input("Enter name, age, score: ").split()
    return (name, int(age), float(score))

data = [take_input() for _ in range(3)]
print(data)
```

✅ 10. Handling Unknown Order Using Identifiers — Expert Level

```
# Suppose input is: age:25 name:John score:88.5 (any order)
# We'll use a dictionary for dynamic parsing

raw_input = input("Enter data (e.g. age:25 name:John score:88.5): ").split()
info = {}
```

```
for item in raw_input:
    key, value = item.split(":")
    if key == "age":
        info[key] = int(value)
    elif key == "score":
        info[key] = float(value)
    else:
        info[key] = value

print(info)
# Example Output: {'age': 25, 'name': 'John', 'score': 88.5}
```

✅ 11. Dynamic Type Detection with `eval()` (⚠️ Use With Caution)

```
# This version uses eval to auto detect types (not safe for untrusted inputs)
input_data = input("Enter inputs like: 25 'John' 88.5 True: ")
parsed = [eval(x) for x in input_data.split()]
print(parsed)
```

✅ Summary Table

Level	Input Style	Key Techniques
Beginner	Single value / split string	`input()`, `.split()`, `int()`, `float()`
Intermediate	List / loop based input	`map()`, list comprehension
Advanced	Mixed types, functions	Tuple unpacking, `for` loops
Expert	Dynamic parsing	Dictionaries, type handling

Would you like me to convert this into a **PDF notebook**, **interactive notebook**, or organize it for a **YouTube video script or GitHub markdown**?