List, Tuple, dan Dictionary

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# KEMAMPUAN AKHIR YANG DIRENCANAKAN

*Mahasiswa mampu memahami dan menggunakan list, tuple, dan dictionary dalam program sederhana*

# INDIKATOR

 *Mampu memahami konsep tentang list, tuple, dan dictionary*

 *Mampu menerapkan penggunaan list, tuple, dan dictionary*

PRAKTIKUM

Buatlah aplikasi CRUD (Create, Read, Update, dan Delete) dengan menggunakan untuk data pegawai yang meliputi: id pegawai, nama pegawai dan nomor HP!

Aplikasi tersebut dibuat dengan menggunakan:

 List

 Dictionary

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| **Nomor 1: List** |
| import tkinter as gui  # List utama untuk menyimpan data pegawai  id\_pegawai = []  nama = []  nomor\_hp = []  # ==GUI setup untuk tampilan GUI utama/root==  root = gui.Tk()  root.title("Data Pegawai")  root.geometry("450x550")  # ==Frame untuk grouping field==  frame\_menu = gui.Frame(root)  frame\_menu.pack(pady=10)  frame\_input = gui.Frame(root)  frame\_input.pack(pady=10)  frame\_output = gui.Frame(root)  frame\_output.pack(pady=10, fill="both", expand=True)  frame\_list = gui.Frame(root)  frame\_list.pack(pady=10, fill="both", expand=True)  # === field untuk output CRUD ===  output\_box = gui.Text(frame\_output, height=6, width=50, wrap="word", relief="groove", borderwidth=2)  output\_box.pack()  # === field untuk menampilkan List data prgawai===  gui.Label(frame\_list, text="Daftar Data Pegawai:", font=("Arial", 10, "bold")).pack()  list\_box = gui.Text(frame\_list, height=8, width=50, wrap="none", relief="sunken", borderwidth=2, state="disabled")  list\_box.pack()  # === functon untuk refresh output dan cleaar field khusus untuk CRUD ===  def clear\_input\_frame():  """menghapus semua widget di input field"""  for widget in frame\_input.winfo\_children():  widget.destroy()  def show\_output(text):  """menampilkan teks di output field"""  output\_box.delete(1.0, gui.END)  output\_box.insert(gui.END, text)  def refresh\_list():  """menampilkan list data pegawai"""  list\_box.config(state="normal")  list\_box.delete(1.0, gui.END)  if len(id\_pegawai) == 0:  list\_box.insert(gui.END, "Belum ada data pegawai.\n")  else:  list\_box.insert(gui.END, f"{'ID':<10} | {'Nama':<20} | {'No HP':<15}\n")  list\_box.insert(gui.END, "-" \* 50 + "\n")  for i in range(len(id\_pegawai)):  list\_box.insert(gui.END, f"{id\_pegawai[i]:<10} | {nama[i]:<20} | {nomor\_hp[i]:<15}\n")  list\_box.config(state="disabled")  # === function CRUD dengan generate input field ===  def create():  clear\_input\_frame()  gui.Label(frame\_input, text="Masukkan ID Pegawai:").pack()  entry\_id = gui.Entry(frame\_input, width=30)  entry\_id.pack()  gui.Label(frame\_input, text="Masukkan Nama Pegawai:").pack()  entry\_nama = gui.Entry(frame\_input, width=30)  entry\_nama.pack()  gui.Label(frame\_input, text="Masukkan Nomor HP Pegawai:").pack()  entry\_hp = gui.Entry(frame\_input, width=30)  entry\_hp.pack()  #function untuk append data  def save():  id\_pegawai.append(entry\_id.get())  nama.append(entry\_nama.get())  nomor\_hp.append(entry\_hp.get())  show\_output(f"Data pegawai '{entry\_nama.get()}' berhasil ditambahkan.")  clear\_input\_frame()  refresh\_list()  gui.Button(frame\_input, text="Simpan", command=save).pack(pady=5)  def read():  clear\_input\_frame()  gui.Label(frame\_input, text="Masukkan ID Pegawai yang ingin dicari:").pack()  entry\_id = gui.Entry(frame\_input, width=30)  entry\_id.pack()  def find():  id\_search = entry\_id.get()  if id\_search in id\_pegawai:  i = id\_pegawai.index(id\_search)  result = (f"ID: {id\_pegawai[i]}\n"  f"Nama: {nama[i]}\n"  f"Nomor HP: {nomor\_hp[i]}")  else:  result = "Error: Pegawai tidak ditemukan"  show\_output(result)  clear\_input\_frame()  gui.Button(frame\_input, text="Cari", command=find).pack(pady=5)  def update():  clear\_input\_frame()  gui.Label(frame\_input, text="Masukkan ID Pegawai yang akan diubah:").pack()  entry\_id = gui.Entry(frame\_input, width=30)  entry\_id.pack()  def edit():  id\_search = entry\_id.get()  if id\_search in id\_pegawai:  index = id\_pegawai.index(id\_search)  clear\_input\_frame()  gui.Label(frame\_input, text="ID Baru:").pack()  entry\_new\_id = gui.Entry(frame\_input, width=30)  entry\_new\_id.pack()  gui.Label(frame\_input, text="Nama Baru:").pack()  entry\_new\_nama = gui.Entry(frame\_input, width=30)  entry\_new\_nama.pack()  gui.Label(frame\_input, text="Nomor HP Baru:").pack()  entry\_new\_hp = gui.Entry(frame\_input, width=30)  entry\_new\_hp.pack()  def save\_update():  id\_pegawai[index] = entry\_new\_id.get()  nama[index] = entry\_new\_nama.get()  nomor\_hp[index] = entry\_new\_hp.get()  show\_output(f"Data pegawai '{id\_search}' berhasil diupdate.")  clear\_input\_frame()  refresh\_list()  gui.Button(frame\_input, text="Simpan Perubahan", command=save\_update).pack(pady=5)  else:  show\_output("Error: Pegawai tidak ditemukan")  clear\_input\_frame()  gui.Button(frame\_input, text="Lanjut", command=edit).pack(pady=5)  def delete():  clear\_input\_frame()  gui.Label(frame\_input, text="Masukkan ID Pegawai yang akan dihapus:").pack()  entry\_id = gui.Entry(frame\_input, width=30)  entry\_id.pack()  def remove():  id\_search = entry\_id.get()  if id\_search in id\_pegawai:  index = id\_pegawai.index(id\_search)  id\_pegawai.pop(index)  nama.pop(index)  nomor\_hp.pop(index)  show\_output(f"Data pegawai '{id\_search}' telah dihapus.")  refresh\_list()  else:  show\_output("Error: Pegawai tidak ditemukan")  clear\_input\_frame()  gui.Button(frame\_input, text="Hapus", command=remove).pack(pady=5)  # === tombol menu CRUD ===  gui.Label(frame\_menu, text="Menu CRUD Pegawai", font=("Arial", 14, "bold")).pack(pady=5)  gui.Button(frame\_menu, text="Create", width=10, command=create).pack(side="left", padx=5)  gui.Button(frame\_menu, text="Read", width=10, command=read).pack(side="left", padx=5)  gui.Button(frame\_menu, text="Update", width=10, command=update).pack(side="left", padx=5)  gui.Button(frame\_menu, text="Delete", width=10, command=delete).pack(side="left", padx=5)  # refresh field untuk menampilkan list data pegawai  refresh\_list()  root.mainloop() |
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| **Nomor 2: Dictionary** |
| import tkinter as tk  from tkinter import messagebox  # Dictionary utama untuk menyimpan data pegawai  data\_pegawai = {  "id\_pegawai": [],  "nama": [],  "no\_hp": []  }  # Function untuk menampilkan daftar pegawai di field daftar data pegawai  def refresh\_list():  list\_box.delete("1.0", tk.END)  for i in range(len(data\_pegawai["id\_pegawai"])):  list\_box.insert(tk.END, f"ID: {data\_pegawai['id\_pegawai'][i]} | "  f"Nama: {data\_pegawai['nama'][i]} | "  f"Telp: {data\_pegawai['no\_hp'][i]}\n")  # Function untuk menghapus frame input lama  def clear\_input\_frame():  for widget in input\_frame.winfo\_children():  widget.destroy()  # CREATE  def create\_gui():  clear\_input\_frame()  tk.Label(input\_frame, text="Masukkan ID Pegawai:").pack()  id\_entry = tk.Entry(input\_frame)  id\_entry.pack()  tk.Label(input\_frame, text="Masukkan Nama Pegawai:").pack()  nama\_entry = tk.Entry(input\_frame)  nama\_entry.pack()  tk.Label(input\_frame, text="Masukkan Telepon Pegawai:").pack()  hp\_entry = tk.Entry(input\_frame)  hp\_entry.pack()  def submit():  data\_pegawai["id\_pegawai"].append(id\_entry.get())  data\_pegawai["nama"].append(nama\_entry.get())  data\_pegawai["no\_hp"].append(hp\_entry.get())  messagebox.showinfo("Sukses", "Data pegawai berhasil ditambahkan!")  clear\_input\_frame()  refresh\_list()  tk.Button(input\_frame, text="Submit", command=submit).pack(pady=5)  # READ  def read\_gui():  clear\_input\_frame()  tk.Label(input\_frame, text="Masukkan ID Pegawai yang ingin dicari:").pack()  id\_entry = tk.Entry(input\_frame)  id\_entry.pack()  def submit():  idx = id\_entry.get()  if idx in data\_pegawai["id\_pegawai"]:  index\_search = data\_pegawai["id\_pegawai"].index(idx)  result = (f"ID: {data\_pegawai['id\_pegawai'][index\_search]}\n"  f"Nama: {data\_pegawai['nama'][index\_search]}\n"  f"No HP: {data\_pegawai['no\_hp'][index\_search]}")  output\_box.delete("1.0", tk.END)  output\_box.insert(tk.END, result)  else:  output\_box.delete("1.0", tk.END)  output\_box.insert(tk.END, "Error: Pegawai tidak ditemukan")  tk.Button(input\_frame, text="Cari", command=submit).pack(pady=5)  # UPDATE  def update\_gui():  clear\_input\_frame()  tk.Label(input\_frame, text="Masukkan ID Pegawai yang ingin diubah:").pack()  id\_entry = tk.Entry(input\_frame)  id\_entry.pack()  tk.Label(input\_frame, text="Masukkan ID Baru:").pack()  id\_new\_entry = tk.Entry(input\_frame)  id\_new\_entry.pack()  tk.Label(input\_frame, text="Masukkan Nama Baru:").pack()  nama\_new\_entry = tk.Entry(input\_frame)  nama\_new\_entry.pack()  tk.Label(input\_frame, text="Masukkan Telepon Baru:").pack()  hp\_new\_entry = tk.Entry(input\_frame)  hp\_new\_entry.pack()  def submit():  idx = id\_entry.get()  if idx in data\_pegawai["id\_pegawai"]:  index\_search = data\_pegawai["id\_pegawai"].index(idx)  data\_pegawai["id\_pegawai"][index\_search] = id\_new\_entry.get()  data\_pegawai["nama"][index\_search] = nama\_new\_entry.get()  data\_pegawai["no\_hp"][index\_search] = hp\_new\_entry.get()  messagebox.showinfo("Sukses", "Data pegawai berhasil diubah!")  clear\_input\_frame()  refresh\_list()  else:  messagebox.showerror("Error", "Pegawai tidak ditemukan")  tk.Button(input\_frame, text="Submit", command=submit).pack(pady=5)  # DELETE  def delete\_gui():  clear\_input\_frame()  tk.Label(input\_frame, text="Masukkan ID Pegawai yang ingin dihapus:").pack()  id\_entry = tk.Entry(input\_frame)  id\_entry.pack()  def submit():  idx = id\_entry.get()  if idx in data\_pegawai["id\_pegawai"]:  index\_search = data\_pegawai["id\_pegawai"].index(idx)  data\_pegawai["id\_pegawai"].pop(index\_search)  data\_pegawai["nama"].pop(index\_search)  data\_pegawai["no\_hp"].pop(index\_search)  messagebox.showinfo("Sukses", "Data pegawai berhasil dihapus!")  clear\_input\_frame()  refresh\_list()  else:  messagebox.showerror("Error", "Pegawai tidak ditemukan")  tk.Button(input\_frame, text="Hapus", command=submit).pack(pady=5)  # Window utama  window = tk.Tk()  window.title("Data Pegawai menggunakan Dictionary")  window.geometry("700x500")  # Tombol CRUD  button\_frame = tk.Frame(window)  button\_frame.pack(pady=10)  tk.Button(button\_frame, text="Create", command=create\_gui, width=10).pack(side=tk.LEFT, padx=5)  tk.Button(button\_frame, text="Read", command=read\_gui, width=10).pack(side=tk.LEFT, padx=5)  tk.Button(button\_frame, text="Update", command=update\_gui, width=10).pack(side=tk.LEFT, padx=5)  tk.Button(button\_frame, text="Delete", command=delete\_gui, width=10).pack(side=tk.LEFT, padx=5)  # Frame input  input\_frame = tk.Frame(window)  input\_frame.pack(pady=10)  # field output  output\_box = tk.Text(window, height=6, width=70, relief="solid", borderwidth=1)  output\_box.pack(pady=5)  # Field daftar data pegawai  tk.Label(window, text="Daftar Data Pegawai:").pack()  list\_box = tk.Text(window, height=10, width=70, relief="solid", borderwidth=1)  list\_box.pack()  # Start program GUI  window.mainloop() |
| **Hasil:** |
| Create: |
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| Read: |
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| Update: |
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| Delete: |
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