MID Program Design Methods

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1. Buatkan tabel IPO chart!

Input	Processing	Output
deposito, select tenor year	Total Bunga deposito Set bunga = deposito * bungaPerTahun/12 * tenor Set depositoTotal = deposito + bunga Set totalBunga = depositoTotal- depositoAwal Interest Expenses Set expenses = totalBunga * 0.01 Income Tax Set tax = totalBunga * 0.2 Net Investment Set investment = deposito + (totalBunga - expenses - tax)	Output Total bunga Interest Expenses Income Tax Net Investment

2. Buatkan desain Pseudocode!

```
1.  Module main()
2.      Declare Real totalBungaDeposito, totalInvestment
3.      Call getInput()
4.      Call calculateTotalBunga(totalBungaDeposito)
5.      Call deduction()
6.      Call netInvestment(totalInvestment)
7.  End Module
8.
9.  getInput()
10.     Declare Real depositoInput, bungaInput
11.     Declare Integer tenorInput, yearInput
12.     Call getDeposito(depositoInput)
13.     Call getTenor(tenorInput, bungaInput)
14.     Call getYear(yearInput)
15. End Module
```

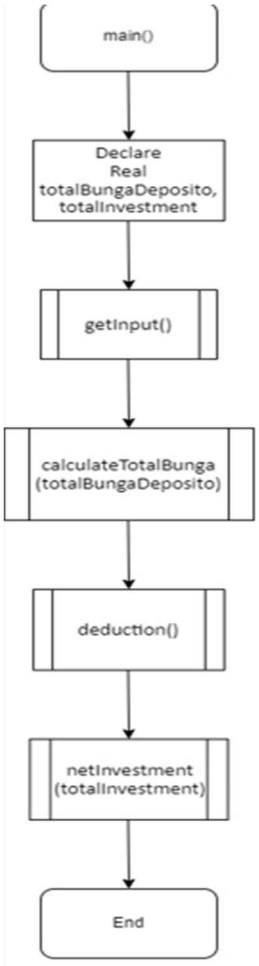
```
16.
17. getDeposito(Real Ref deposito)
18.         Display "Enter the Deposito."
19.         Input deposito
20.
21.         While deposito < 100 OR deposito > 10.000
22.                 Display "The Deposito cannot be less than USD $100 or greater than
    USD $10,000"
23.                 Input deposito
24.         End While
25. End Module
26.
27. getTenor(Integer Ref tenor, Real Ref bungaPertahun)
28.         Declare Integer menuSelection
29.
30.         Display "1. 1 Month  = 3.4%"
31.         Display "2. 3 Month  = 3.6%"
32.         Display "3. 6 Month  = 3.75%"
33.         Display "4. 12 Month = 4.2%"
34.
35.         Display "Enter your Selection"
36.
37.         Input menuSelection
38.
39.         While menuSelection < 1 OR menuSelection > 4
40.                 Display "That is an invalid selection"
41.                 Input menuSelection
42.         End While
43.
44.         Select menuSelection
45.
46.                 Case 1:
47.                         Set tenor = 1
48.                         Set bungaPerTahun = 0.034
49.
50.                 Case 2:
51.                         Set tenor = 3
52.                         Set bungaPerTahun = 0.036
53.
54.                 Case 3:
55.                         Set tenor = 6
56.                         Set bungaPerTahun = 0.0375
57.
58.                 Case 4:
59.                         Set tenor= 12
60.                         Set bungaPerTahun = 0.042
61.         End Selection
62. End Module
```

```
63.
64.  Module getYear(Integer Ref year)
65.       Display "Enter the year."
66.       input year
67.
68.       While year < 1 OR year > 10
69.            Display "The Year cannot be less than 1 Year or greater than 10 Year"
70.            Input year
71.       End While
72.  End Module
73.
74.  Module calculateTotalBunga(Integer tenor, Integer year, Real deposito, Real
     bungaPertahun, Ral Ref totalBunga)
75.       Declare Real bunga, depositoAwal, depositoTotal
76.       Declare Integer repetition, i = 0
77.       Set repetition = (12/tenor) * year
78.       FOR i < repetition
79.            Set bunga = deposito * bungaPerTahun/12 * tenor
80.            Set depositoTotal = deposito + bunga
81.            Set  totalBunga = depositoTotal - depositoAwal
82.            deposito = depositoTotal
83.       End For
84.
85.       Display "Total Bunga Deposito is ", totalBunga
86.  End Module
87.
88.  Module deduction()
89.       Declare Real intExpenses, inTax
90.       Call interestExpenses(intExpenses)
91.       Call incomeTax(inTax)
92.  End Module
93.
94.  Module interestExpenses(Real totalBunga, Real Ref expenses)
95.       Set expenses = totalBunga * 0.01
96.       Display "The Interest Expenses is ", expenses
97.   End Module
98.
99.   Module incomeTax(Real deposito, Real totalBunga, Real Ref tax)
100.      If deposito > 1000 THEN
101.           Set tax = totalBunga * 0.2
102.      Else
103.           Set tax = 0
104.      End If
105.
106.      Display "The Tax is ", tax
107. End Module
108.
```

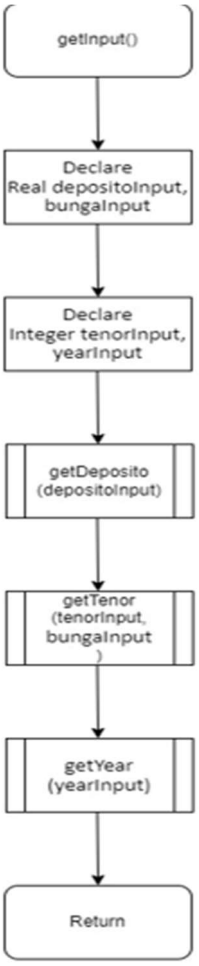
109. Module netInvestment(Real deposito, Real totalBunga, Real expenses, Real tax, Real Ref investment)
110. Set investment = deposito + (totalBunga - expenses - tax)
111.
112. Display "Total Set invesment is ", investment
113. End Module

3. Buatkan desain Flow chart!

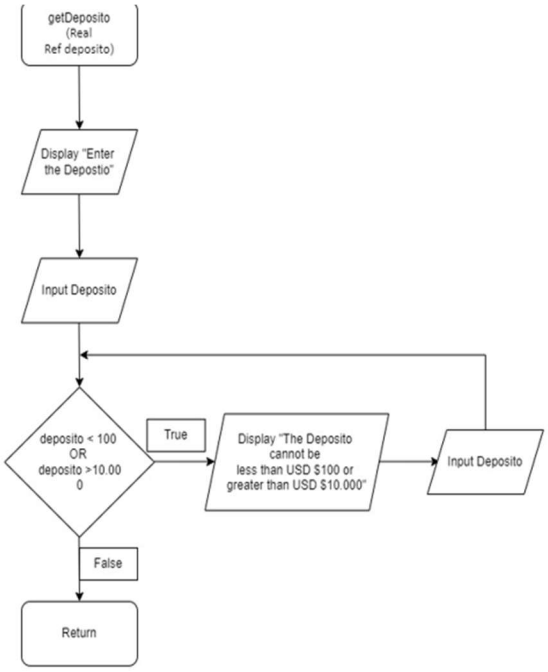
Module main()



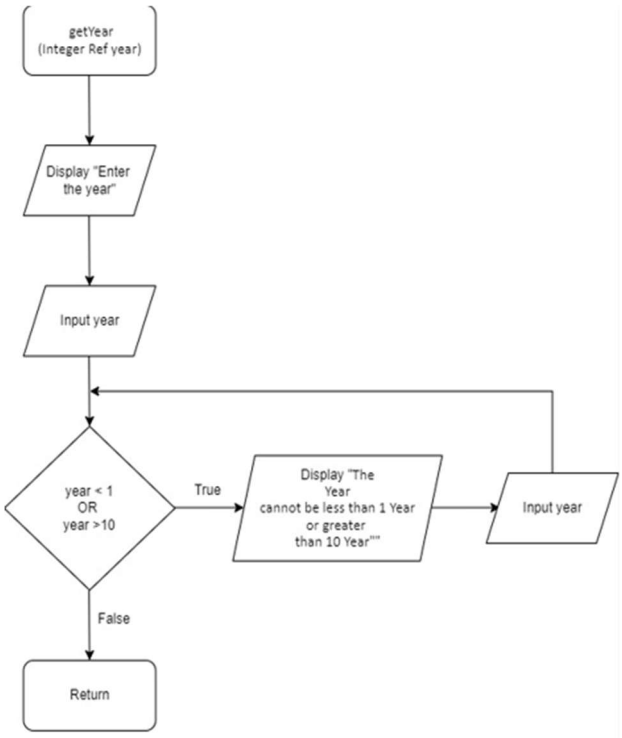
Module getInput()



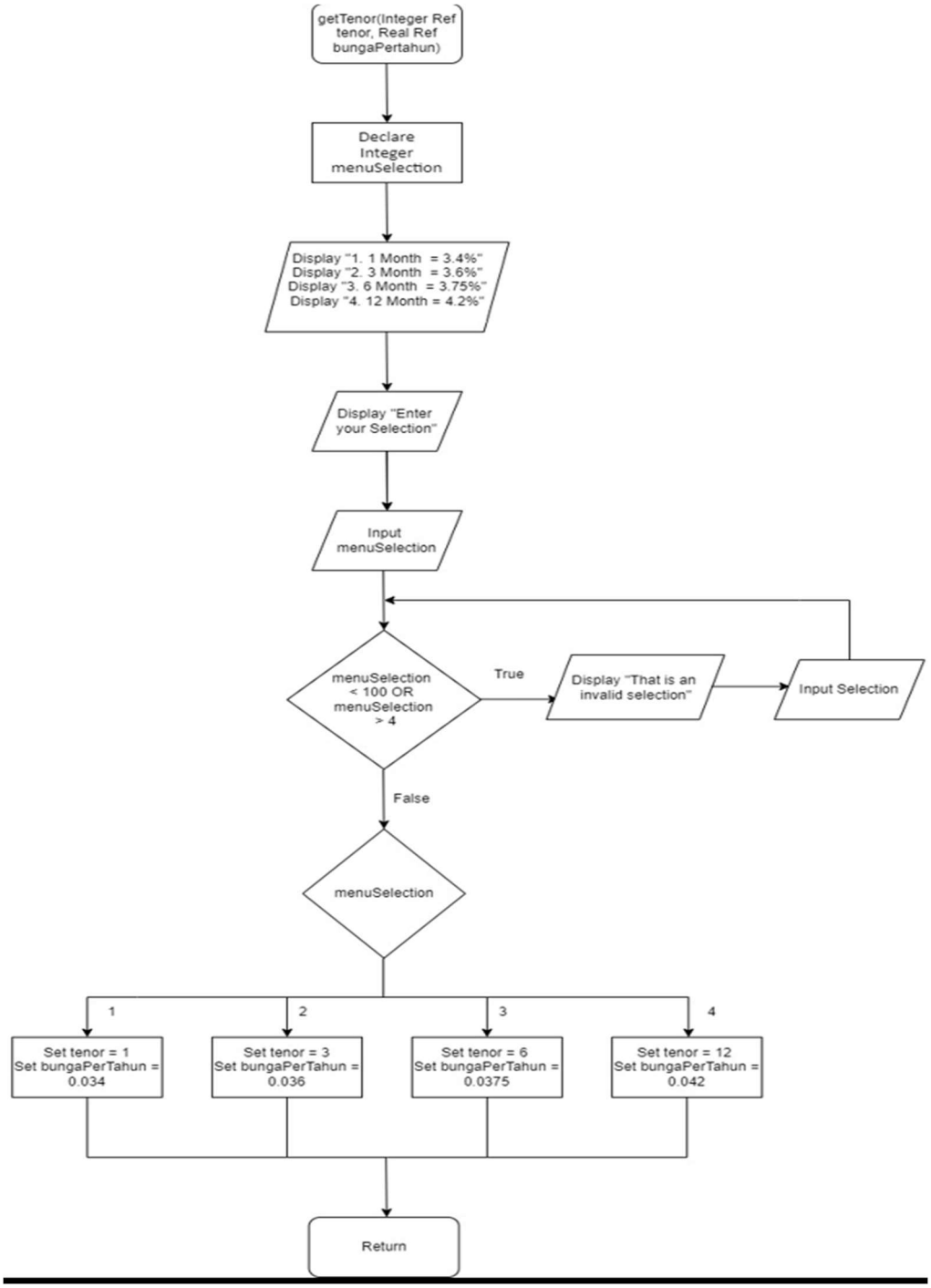
Module getDeposito()



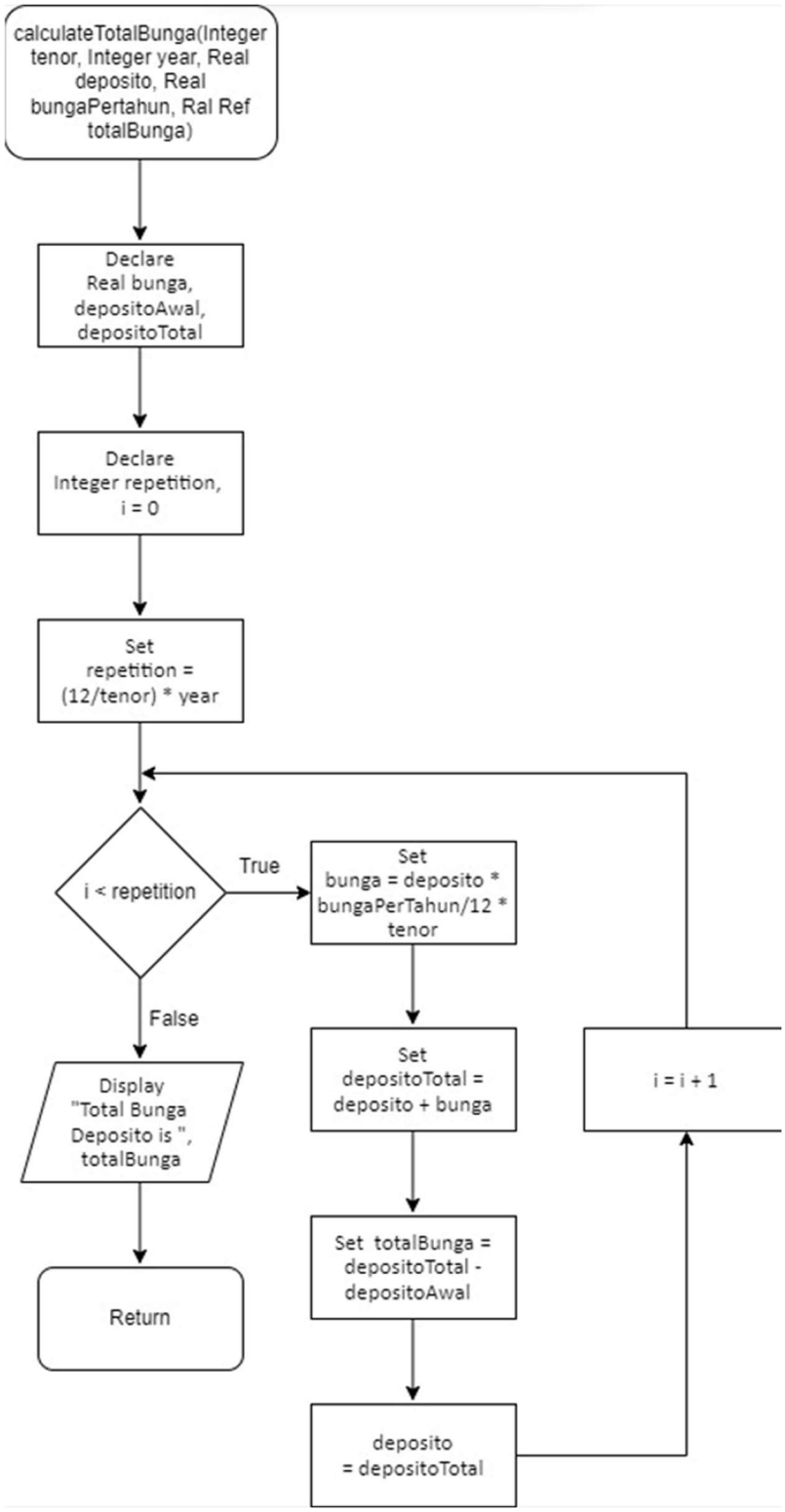
Module getYear()



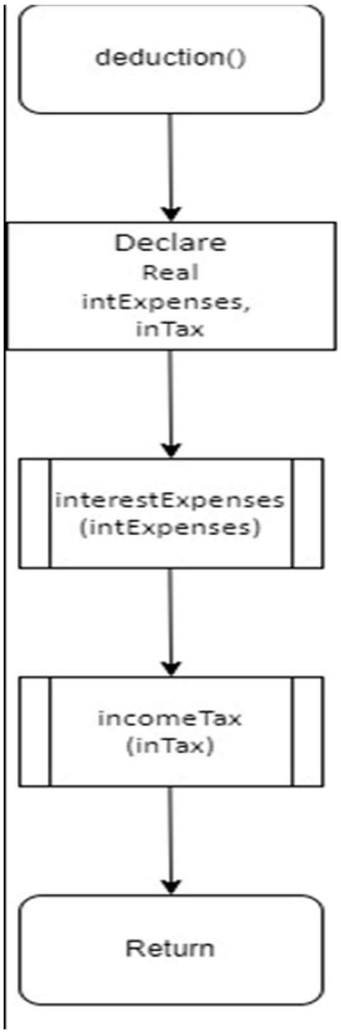
Module getTenor()



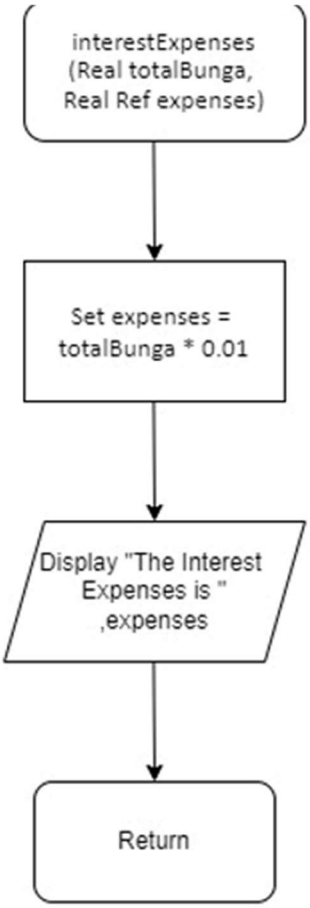
Module calculateTotalBunga()



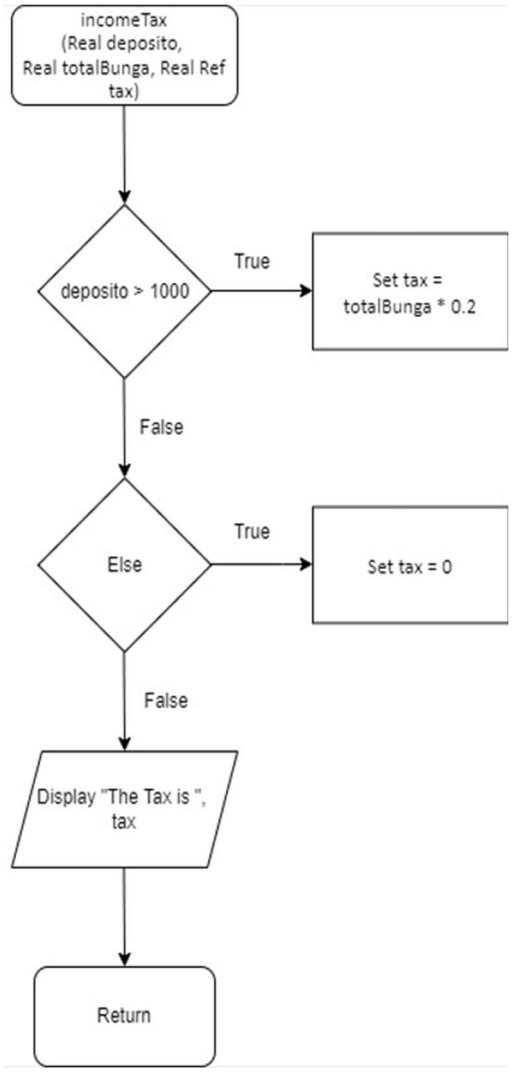
Module deduction()



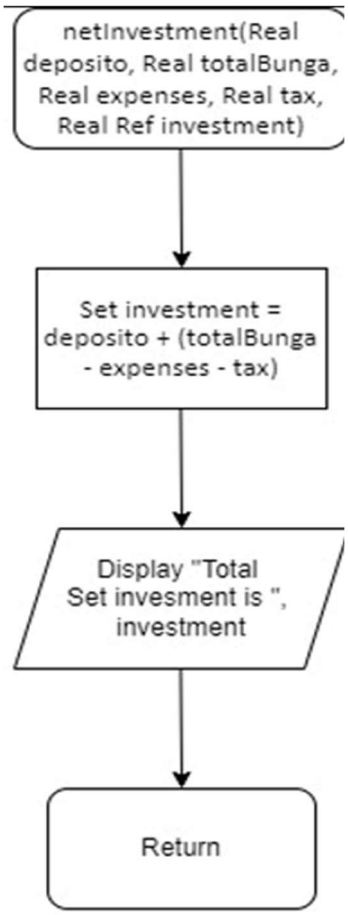
Module interestExpenses()



Module incomeTax()



Module netInvestment()



4. Buatkan Hand tracing minimal 2x inputan berbeda!

	Data Set 1	Data Set 2
Deposito	1500	500
Tenor	12 bulan	6 Bulan
Year	2 Tahun	2 Tahun

Line	Deposito	Tenor	Year	Total Bunga	Interest Expenses	Income Tax	Net Investment
19	1500						
37		12					
66			2				
85				128.64			
96					1.2854		
106						25.728	
112							1601.63

Line	Deposito	Tenor	Year	Total Bunga	Interest Expenses	Income Tax	Net Investment
19	500						
37		6					
66			2				
85				38.56			
96					0.3856		
106						0	
112							538.17

5. Buatkan script C / C++ programming untuk validasi Pseudocode yang telah Anda desain!
   Validasi getDeposito()

```
while(deposito < 100 || deposito > 10000){
    printf("The Deposito cannot be less than USD $100 or greater than USD $10,000");
    scanf("%f",&deposito);
    getchar();
}
```

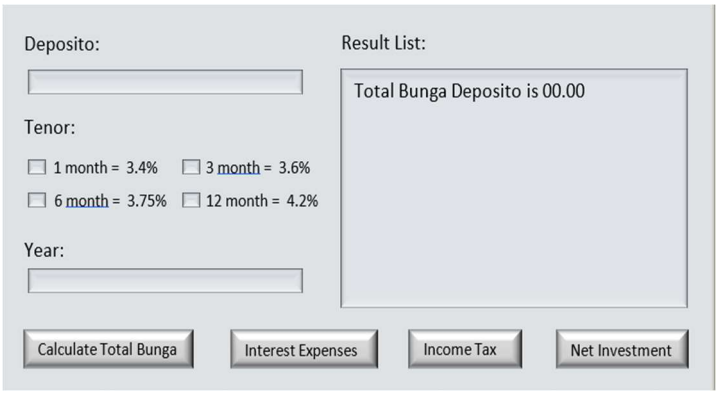
   Validasi getTenor()

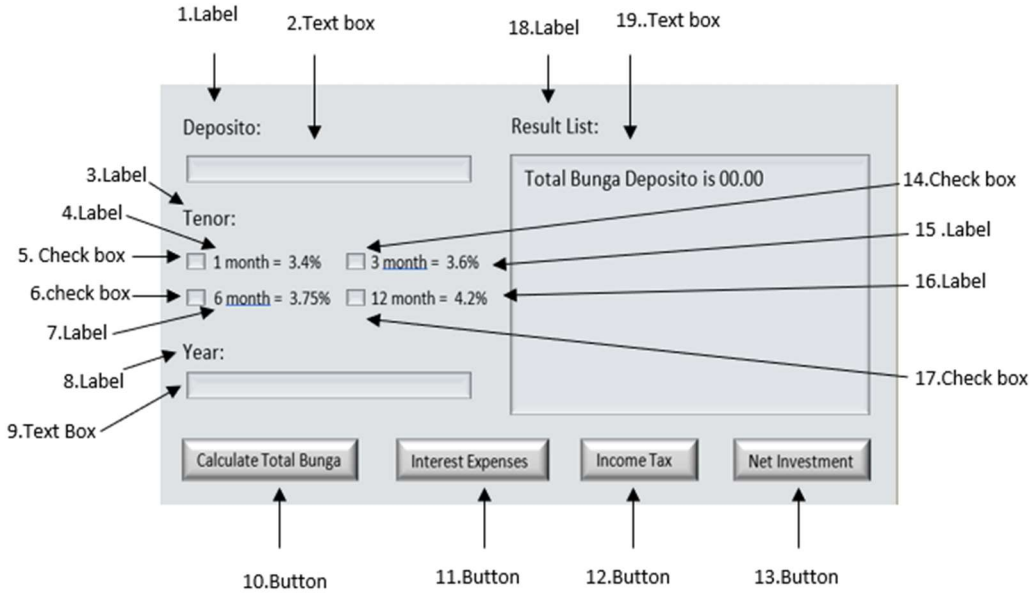
```
while(menuSelection < 1 || menuSelection > 4){
    printf("That is an invalid selection");
    scanf("%d",&menuSelection);
    getchar();
}
```

Validasi getYear()

```
while(year < 1 || year > 10){
    printf("The Year cannot be less than 1 Year or greater than 10 Year");
    scanf("%d",&year);
    getchar();
}
```

6. Buatkan desain Menu dan GUI & Event Program untuk ‘Kalkulator Deposito’ tersebut beserta sebuah tabel berisi daftar komponen dengan rincian nama komponen, tipe komponen, dan deskripsi singkatnya!





Component Number in the Sketch	Component Name	Component Type	Description
1	depositoLabel	Label	Menginstruksikan pengguna untuk memasukkan nilai deposito
2	depositoTextBox	Text Box	Tempat untuk menginput nilai deposito
3.	tenorLabel	Label	Menginstruksikan pengguna untuk memilih tenor
4.	firstTenorLabel	Label	Informasi tenor yang ingin dipilih
5.	firstTenorCheckBox	Check Box	Tempat untuk memilih tenor pertama
6.	secondTenorCheckBox	Check Box	Tempat untuk memilih tenor kedua
7.	secondTenorLabel	Label	Informasi tenor yang ingin dipilih
8.	yearLabel	Label	Mengintruksikan pengguna untuk memasukan nilai tahun
9.	yearTextBox	Text Box	Tempat untuk menginput nilai tahun
10.	totalBungaButton	Button	Komponen yang ketika diklik akan menampilkan hasil total bunga
11.	interestExpensesButton	Button	Komponen yang ketika diklik akan menampilkan hasil interest expenses
12.	incomeTaxButton	Button	Komponen yang ketika diklik akan menampilkan hasil income tax
13.	netInvestmentButton	Button	Komponen yang ketika diklik akan menampilkan hasil dari net investment
14.	thirdTenorCheckBox	Check Box	Tempat untuk memlih tenor ketiga
15.	thirdTenorLabel	Label	Informasi tenor yang ingin dipilih
16.	fourthTenorLabel	Label	Informasi tenor yang ingin dipilih
17.	fourthTenorCheckBox	CheckBox	Tempat untuk memilih tenor keempat
18.	resultListLabel	Label	Informasi tempat output
19.	resultTextBox	Text Box	Tempat output hasil