LAMPIRAN

A. Perhitungan *Bar Bending Schedule* Konvensional

Lampiran A.1. Perhitungan BBS pada fondasi

Lampiran A.2. Perhitungan BBS pada balok

Bar No.	Bar Shape	Location	Bar Member	Bar Type	Bar Length (m)	a (m)	b (m)	c (m)	Dia (mm)	Spacing (mm)	ldc (mm)	lst (mm)	lext (mm)	Bend (mm)	Cutting Length (m)	No. of each Bar	Length of each Bar (m)	No. of Member	Total Length (m)
1		Pedestal + Lt. 1	Tulangan Longitudinal	Ulir	5.2	5.2		0.192	16		104.791	396.228	192	96	6.18	4	24.72	9	222.51
2		Lt. 2	Tulangan Longitudinal	Ulir	3.5		3.5		16			396.228			3.90	4	15.58	9	140.26
3		Lt. 3	Tulangan Longitudinal	Ulir	3.5		3.5		16			396.228			3.90	4	15.58	9	140.26
4		Lt. 4	Tulangan Longitudinal	Ulir	3.5		3.46		16			396.228			3.46	4	13.84	9	124.56
5		15,7 m	Tulangan Sengkang	Ulir		0.192	0.192		13	200				156	306.15	1.23	80	98.41	9	885.71
																			1553.31

Lampiran A.3. Perhitungan BBS pada kolom

Bar No.	Bar Shape	Location	Bar Member	Bar Type	Bar Length (m)	a (m)	b (m)	c (m)	Dia (mm)	Spacing (mm)	ld (mm)	lst (mm)	lext (mm)	Bend (mm)	Cutting Length (m)	No. of each Bar	No. of Member	Length of each Bar (m)	Total Length (m)
5		15,7 m	Tulangan Sengkang	Ulir		0.192	0.192		13	200				156	306.15	1.23	80	98.41	9	885.71
																			1553.31

Bar No	Bar Shape	Location	Bar Member	Bar Type	Bar Length (m)	a (m)	b (m)	c (m)	Dia (mm)	Spacing (mm)	ld (mm)	lst (mm)	lext (mm)	Bend (mm)	Cutting Length (m)	No. of each Bar	No. of Member	Length of each Bar (m)	Total Length (m)
1		Horizontal	Atas	Ulir	15.3		15.22		13	150	789.086	1025.77			17.03	55	5	936.92	4684.58
			Bawah	Ulir	15.3		15.22		13	180	789.086	1025.77			17.03	55	5	936.92	4684.58
2		Vertical	Atas	Ulir	8.3		8.22		13	150					8.22	101	5	830.22	4151.10
			Bawah	Ulir	8.3		8.22		13	150					8.22	101	5	830.22	4151.10
																			17671.36

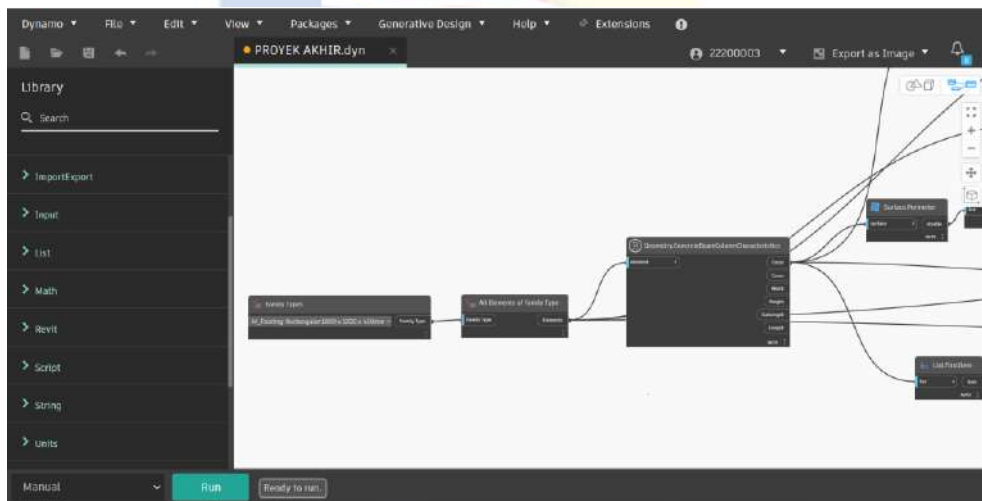Lampiran A.4. Perhitungan BBS pada pelat lantai

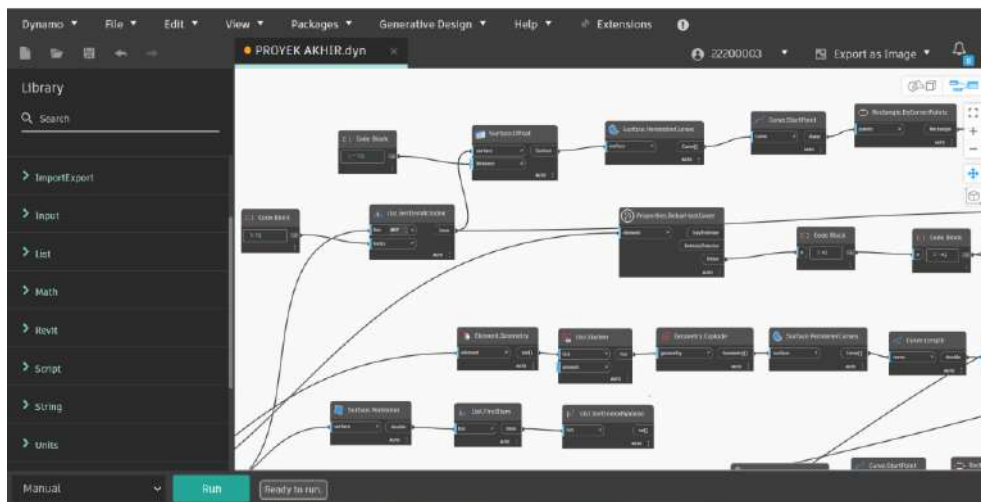**B. Alur Kerja Program pada Dynamo**
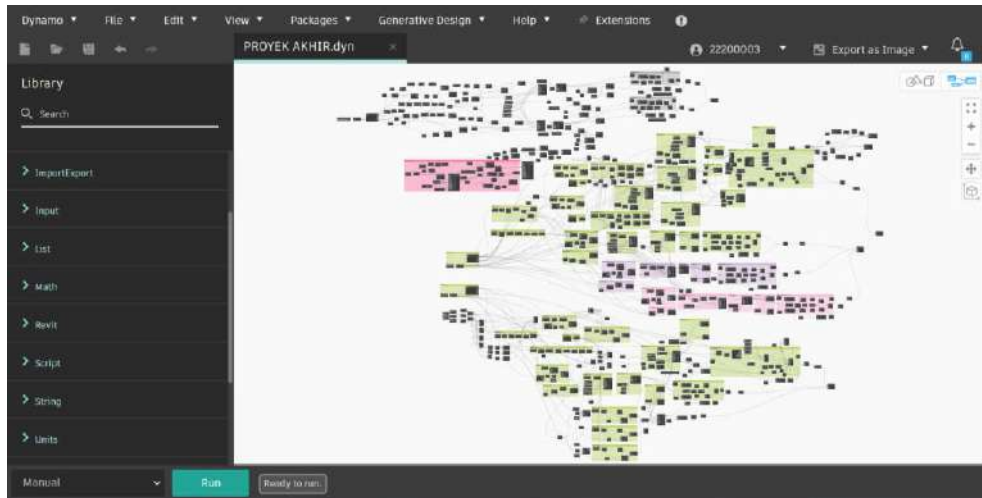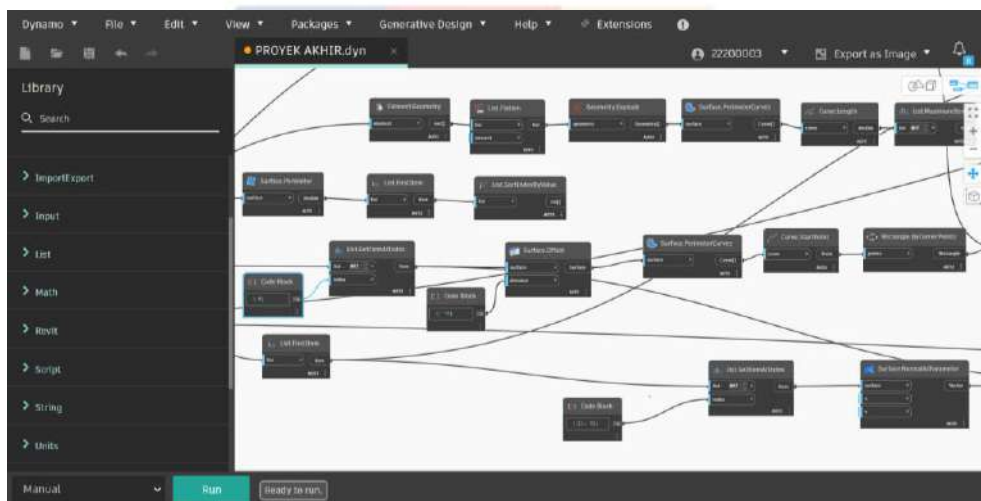

Lampiran B.1. Alur kerja keseluruhan program
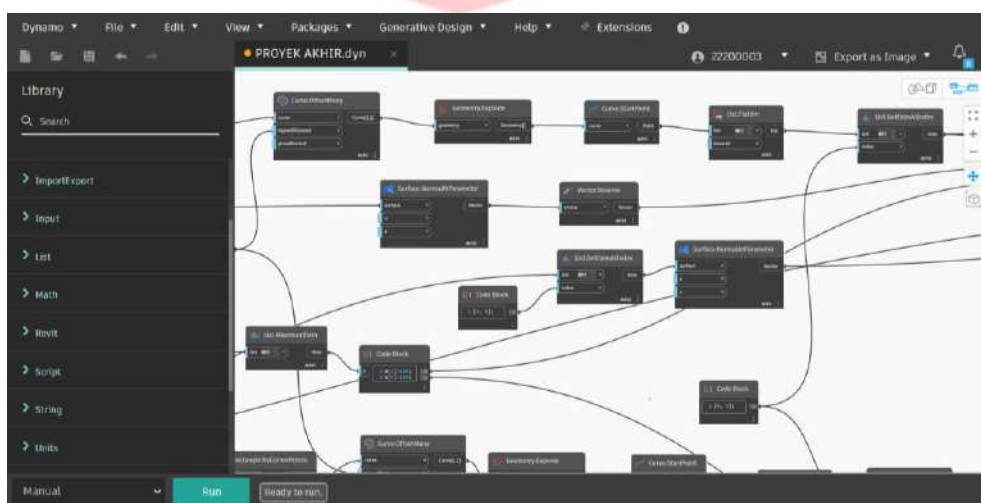
a. Alur Kerja Fondasi
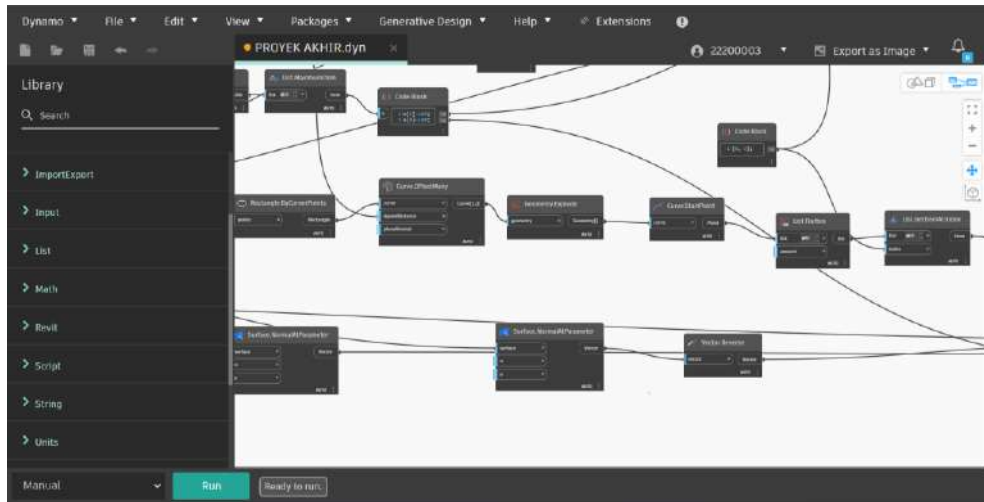

Lampiran B.a.1. Alur kerja fondasi

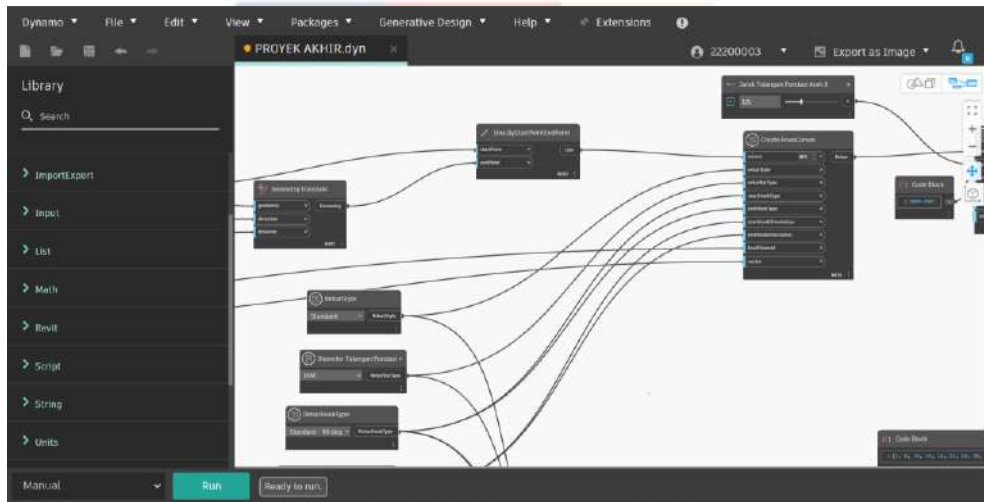Lampiran B.a.2. Alur kerja fondasi

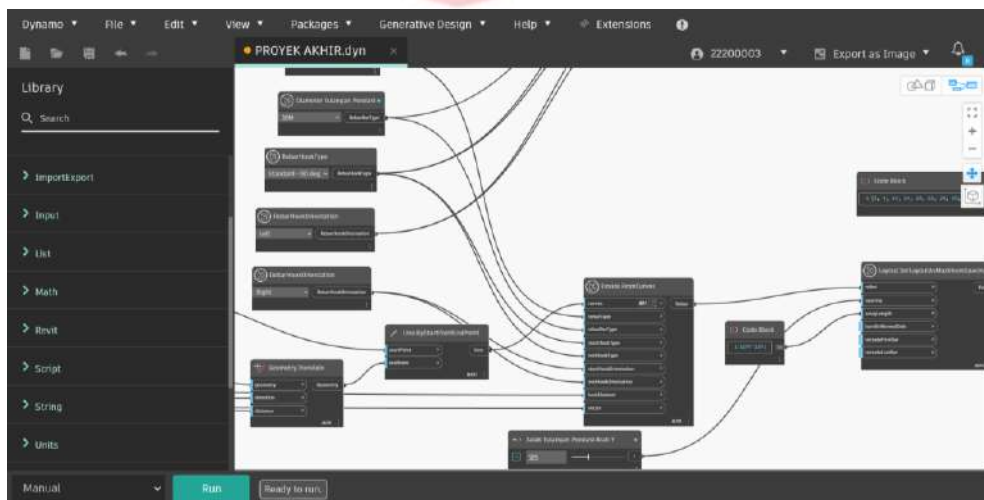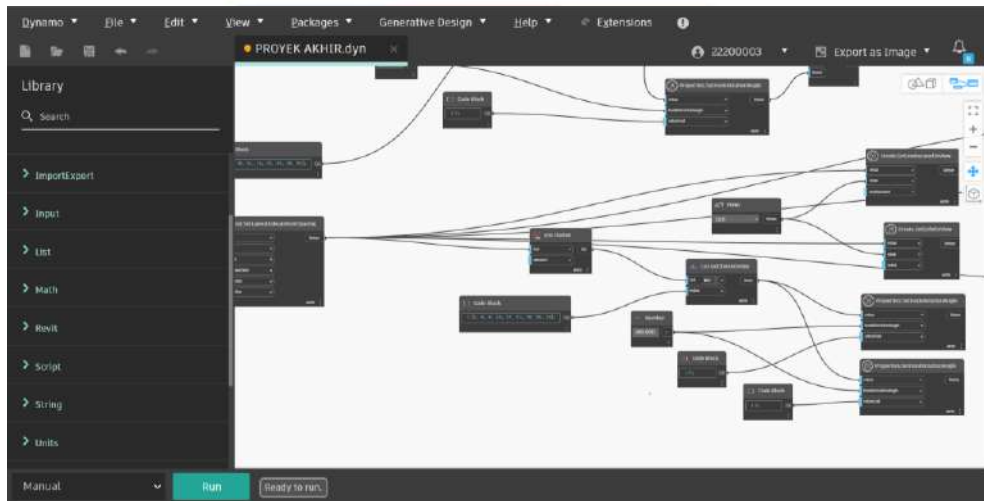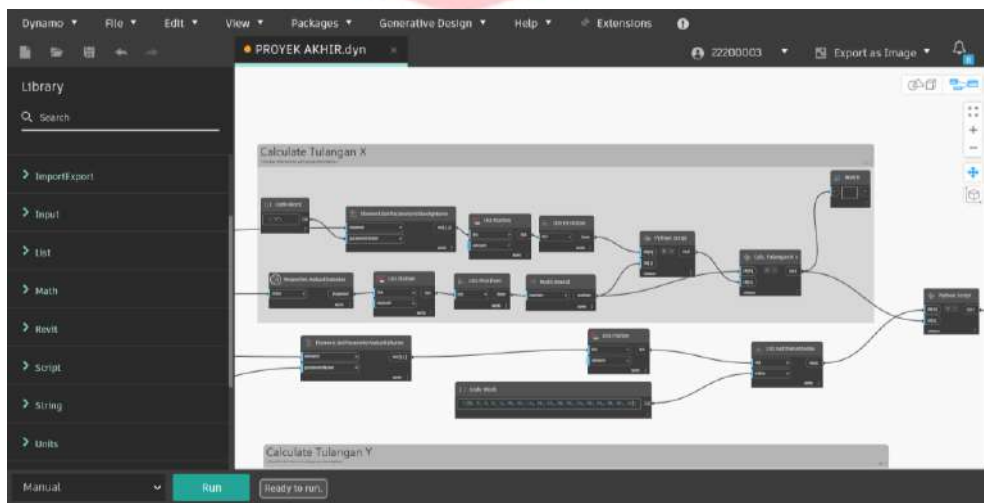Lampiran B.a.3. Alur kerja fondasi

Lampiran B.a.4. Alur kerja fondasi

Lampiran B.a.5. Alur kerja fondasi

Lampiran B.a.6. Alur kerja fondasi

Lampiran B.a.7. Alur kerja fondasi
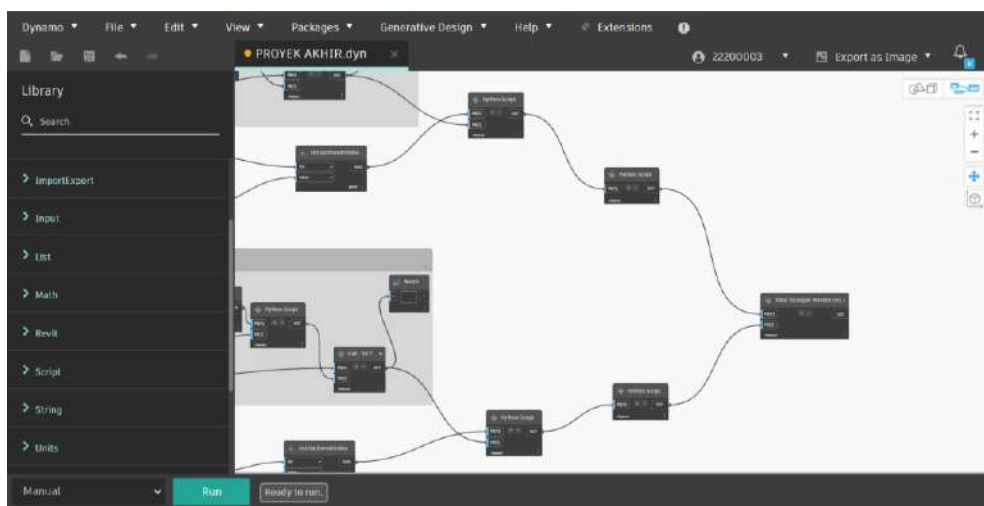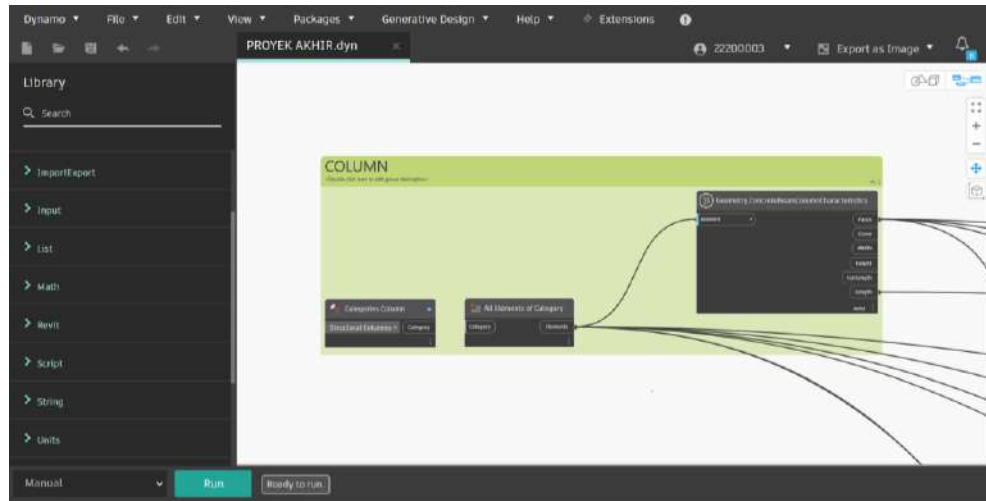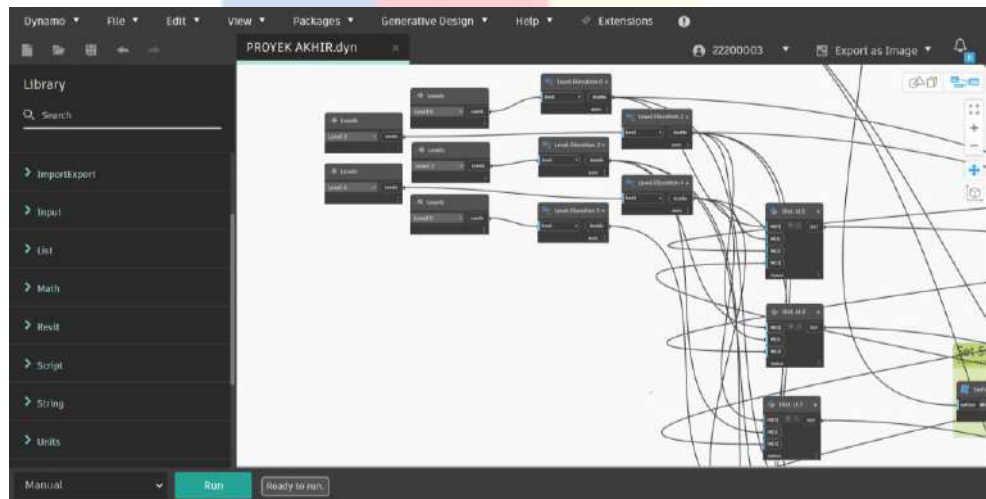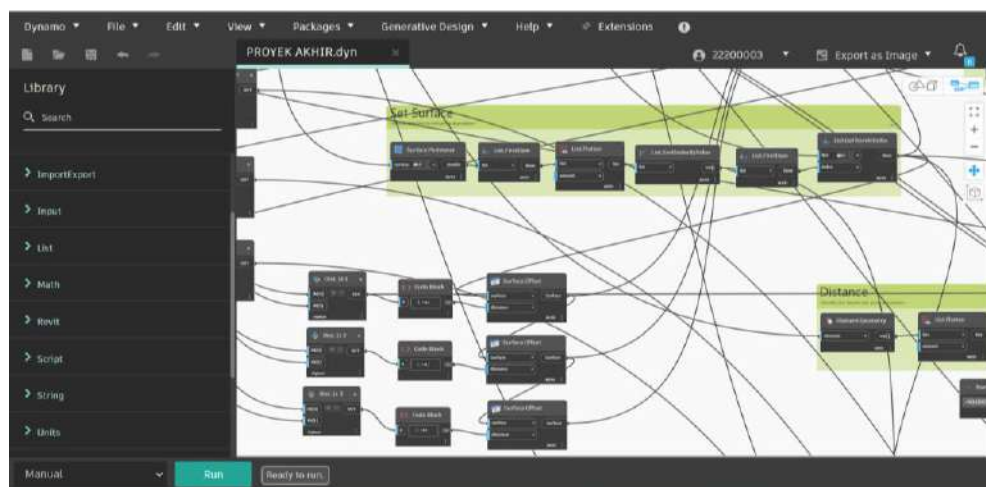
Lampiran B.a.8. Alur kerja fondasi

Lampiran B.a.9. Alur kerja fondasi

Lampiran B.a.10. Alur kerja fondasi

Lampiran B.a.11. Alur kerja fondasi

Lampiran B.a.12. Alur kerja fondasi

b. Alur Kerja Kolom

Lampiran B.b.1. Alur kerja kolom

Lampiran B.b.2. Alur kerja kolom

Lampiran B.b.3. Alur kerja kolom

Lampiran B.b.4. Alur kerja kolom
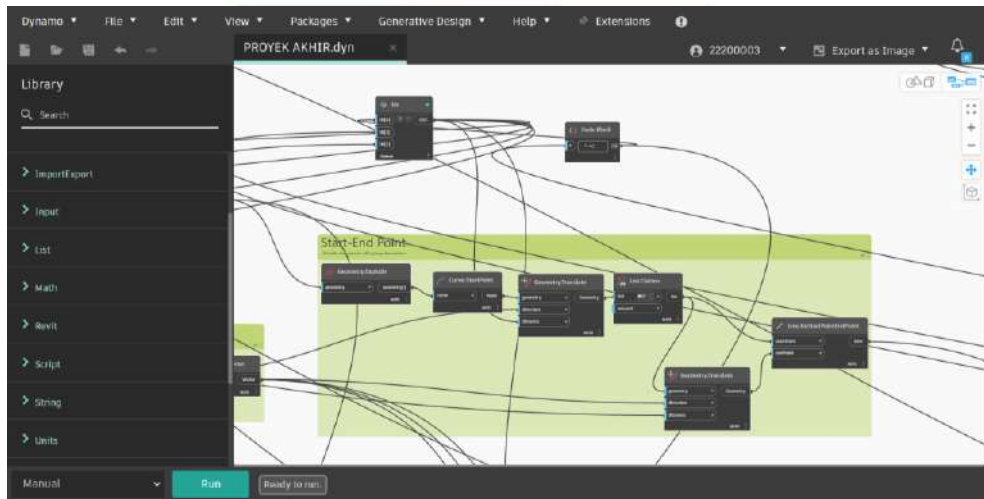
Lampiran B.b.5. Alur kerja kolom
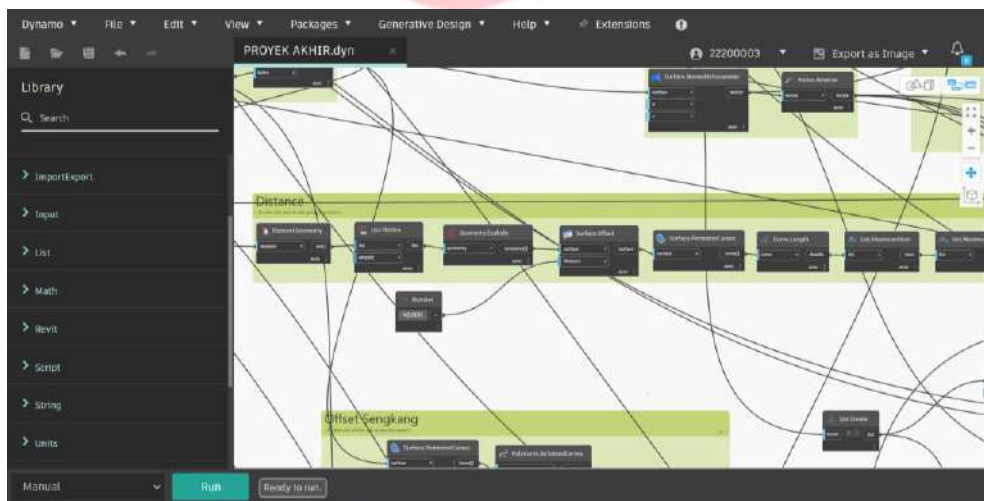
Lampiran B.b.6. Alur kerja kolom
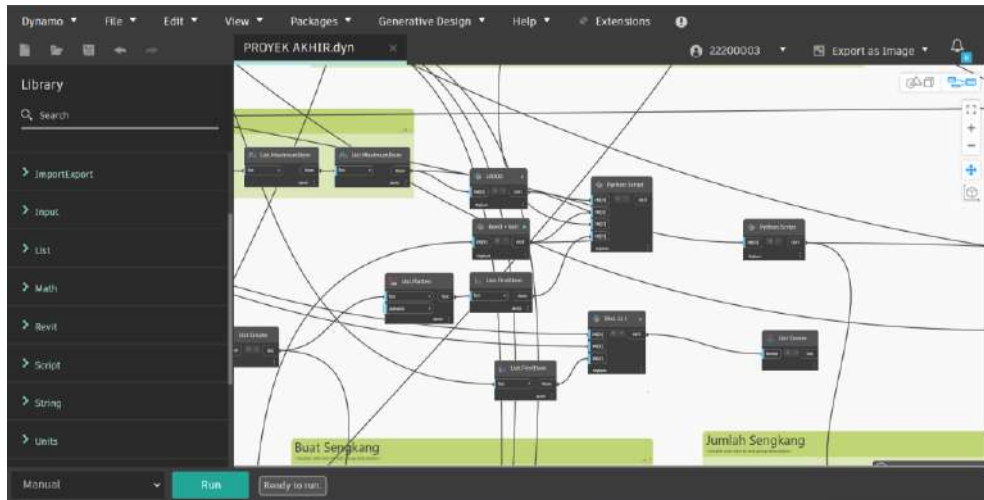
Lampiran B.b.7. Alur kerja kolom
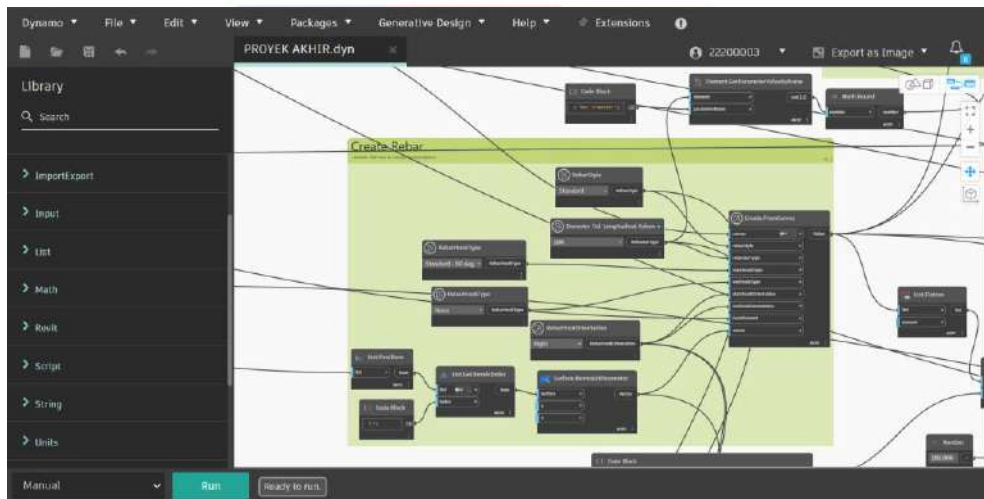
Lampiran B.b.8. Alur kerja kolom
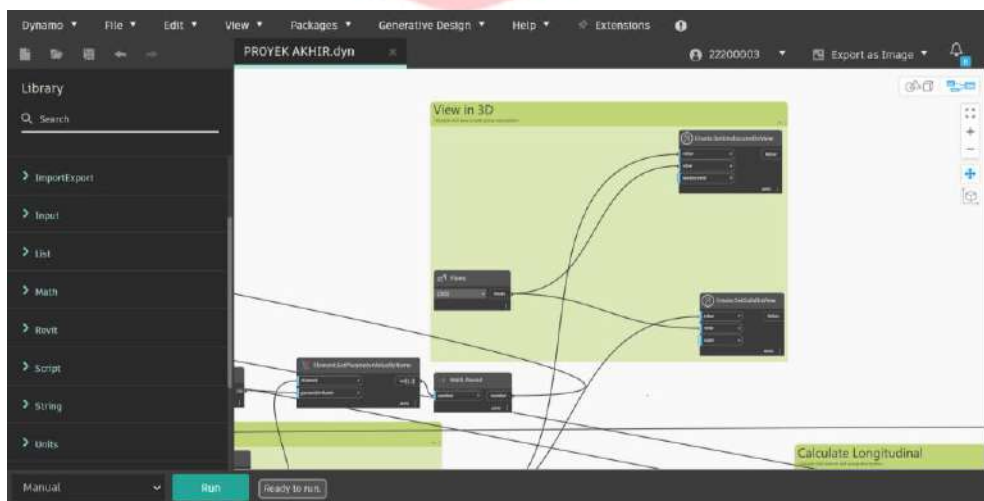
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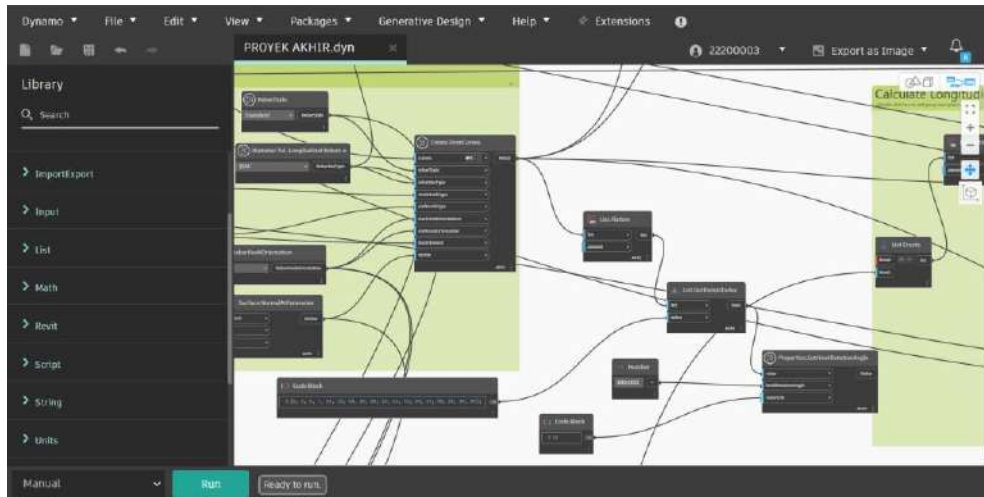
Lampiran B.b.10. Alur kerja kolom

Lampiran B.b.11. Alur kerja kolom
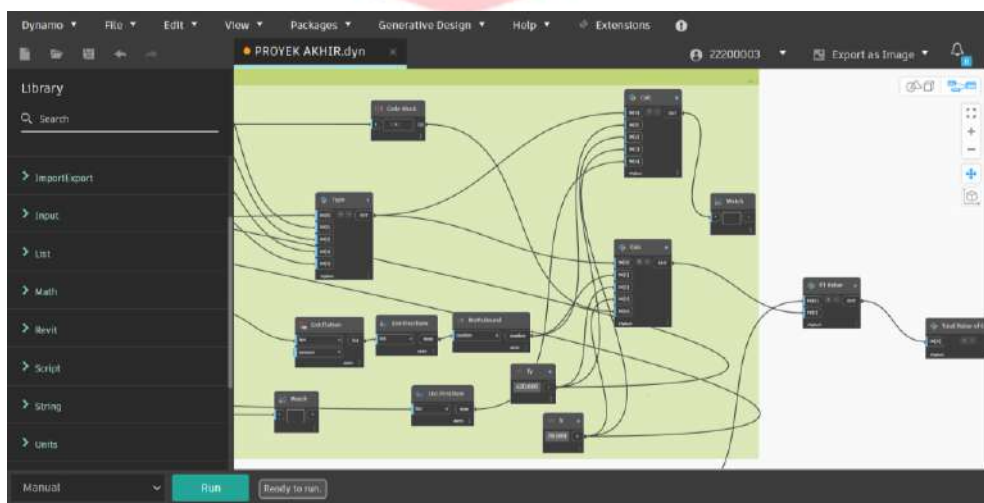
Lampiran B.b.12. Alur kerja kolom
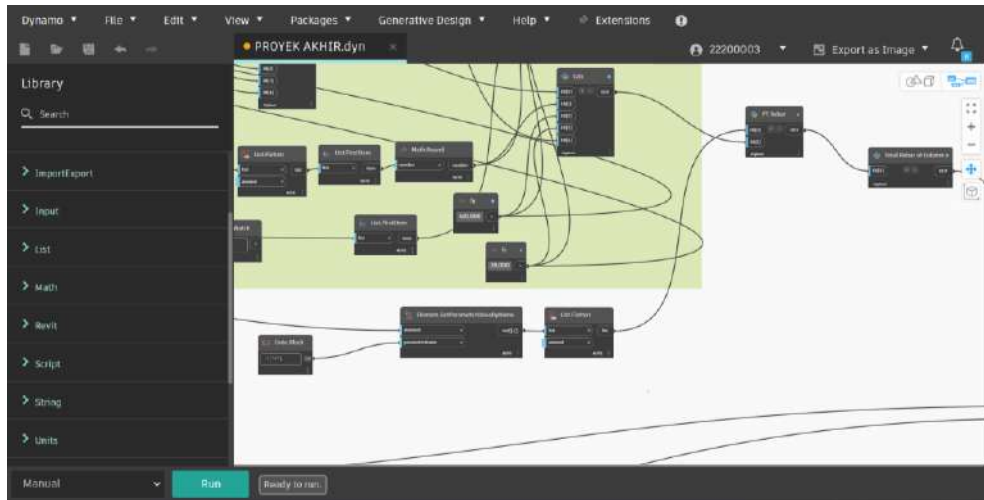
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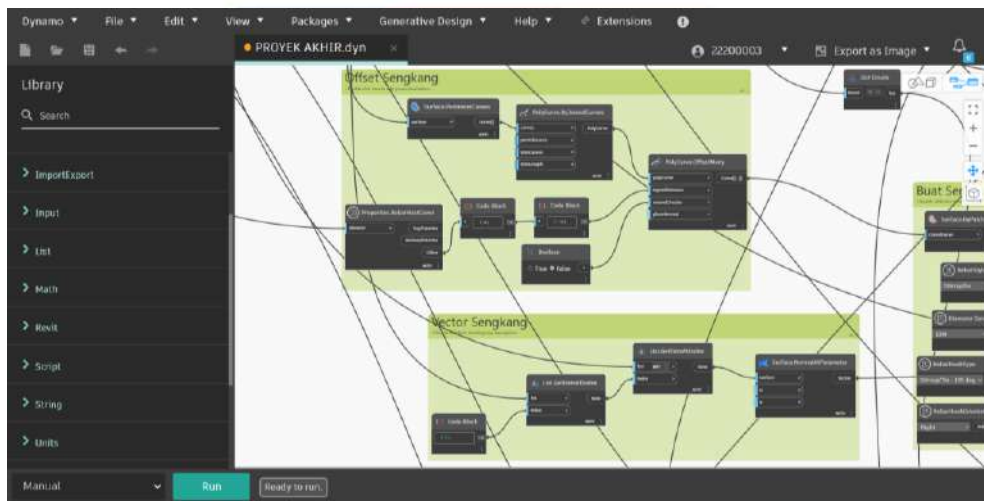
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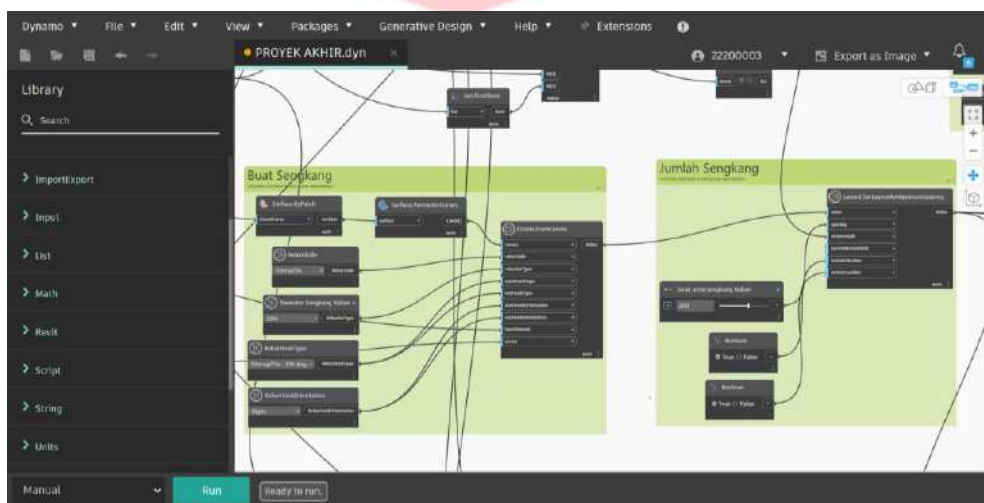
Lampiran B.b.15. Alur kerja kolom

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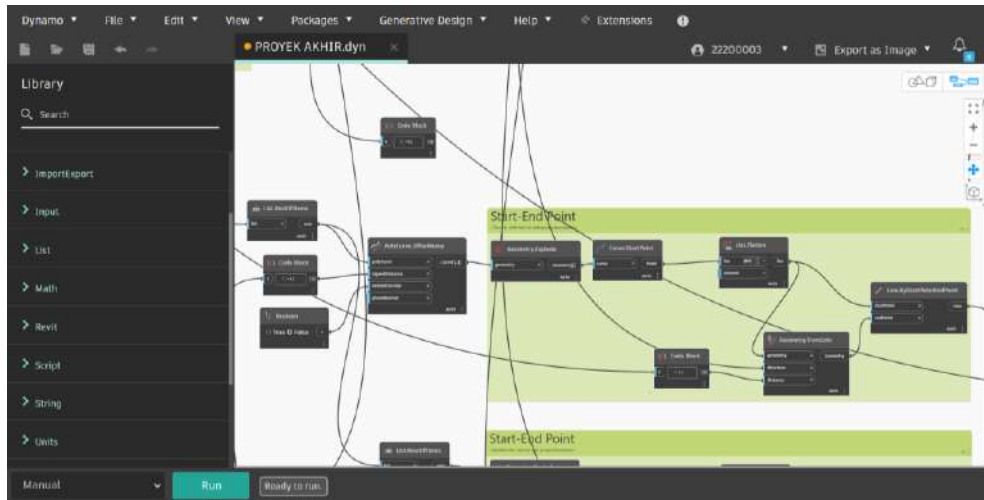
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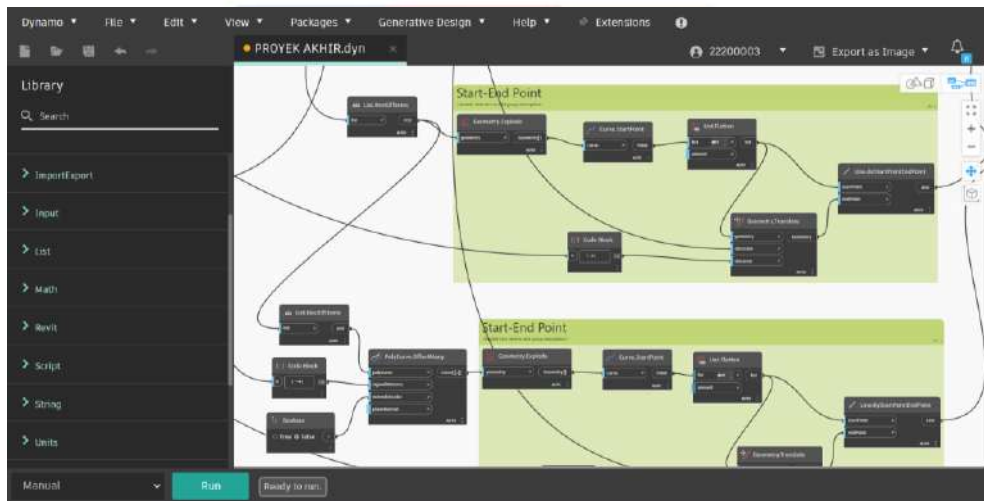
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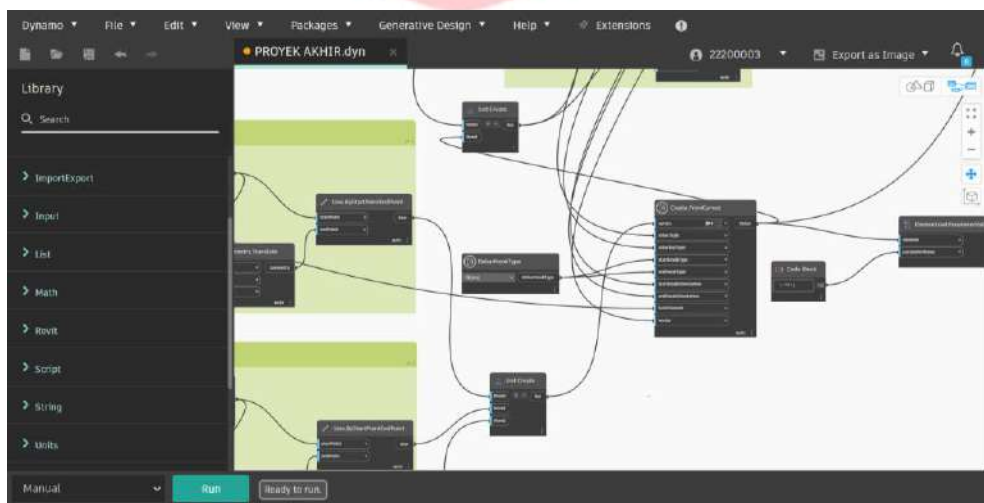
Lampiran B.b.18. Alur kerja kolom

Lampiran B.b.19. Alur kerja kolom
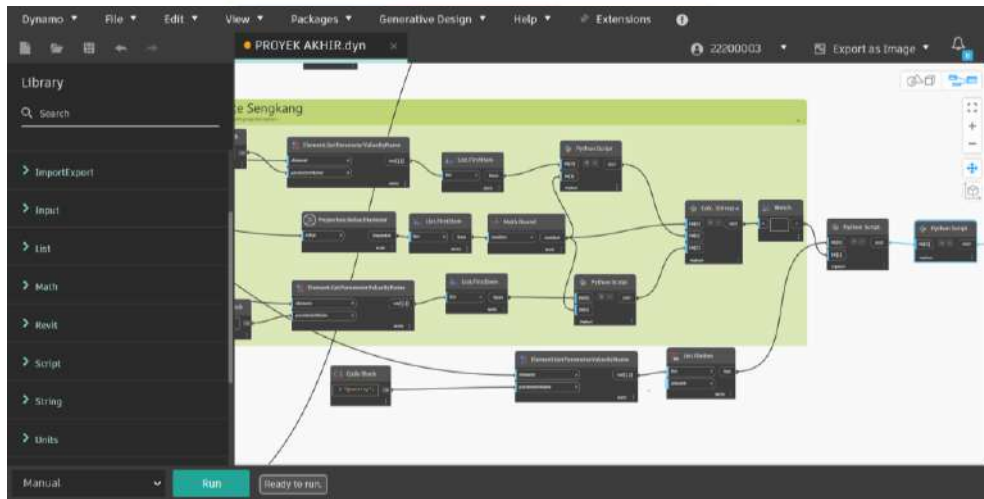
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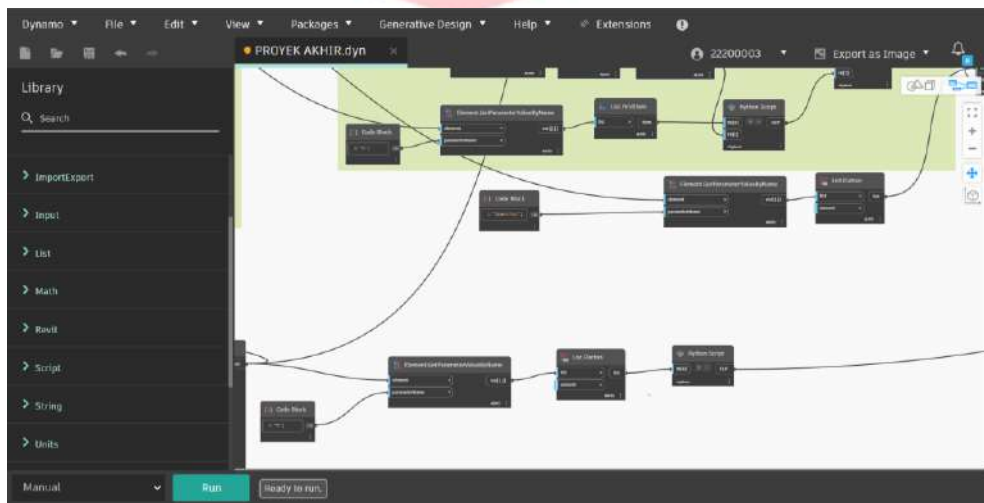
Lampiran B.b.21. Alur kerja kolom
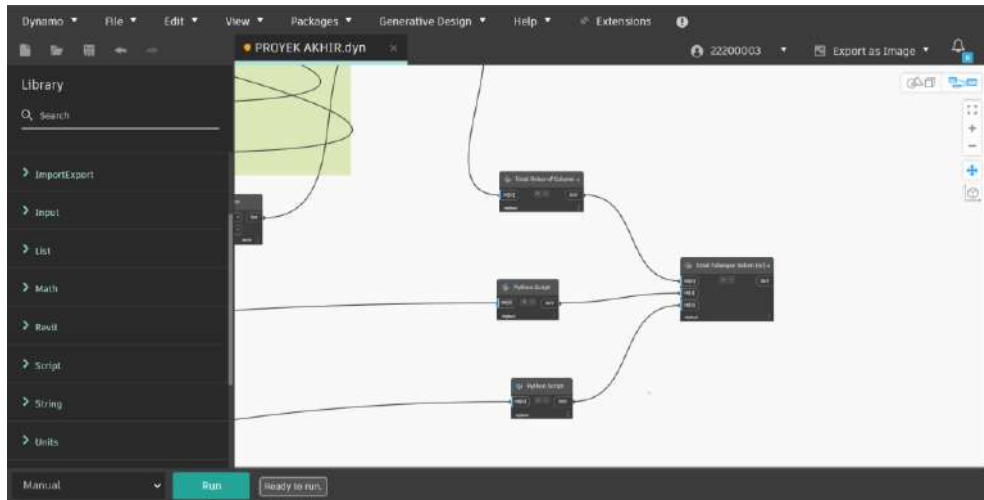
Lampiran B.b.22. Alur kerja kolom

c. Alur Kerja Balok
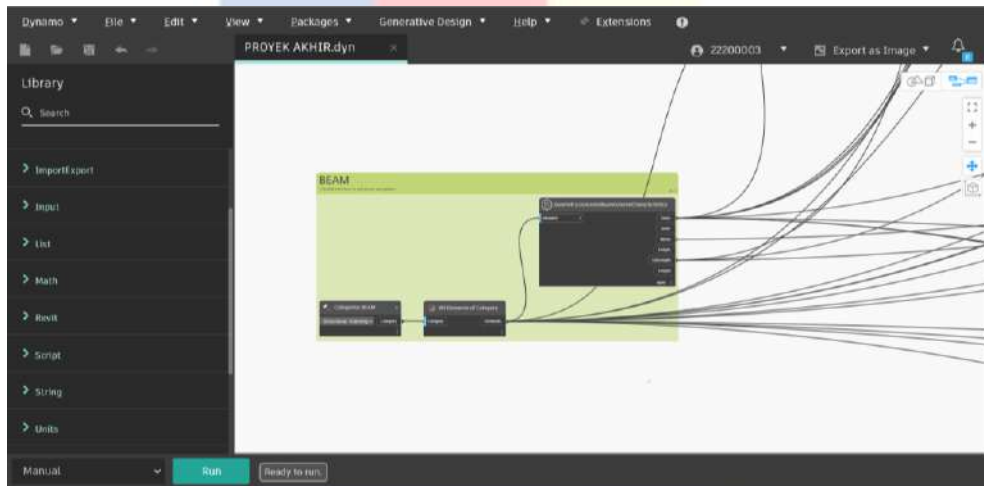
Lampiran B.c.1. Alur kerja balok

Lampiran B.c.2. Alur kerja balok
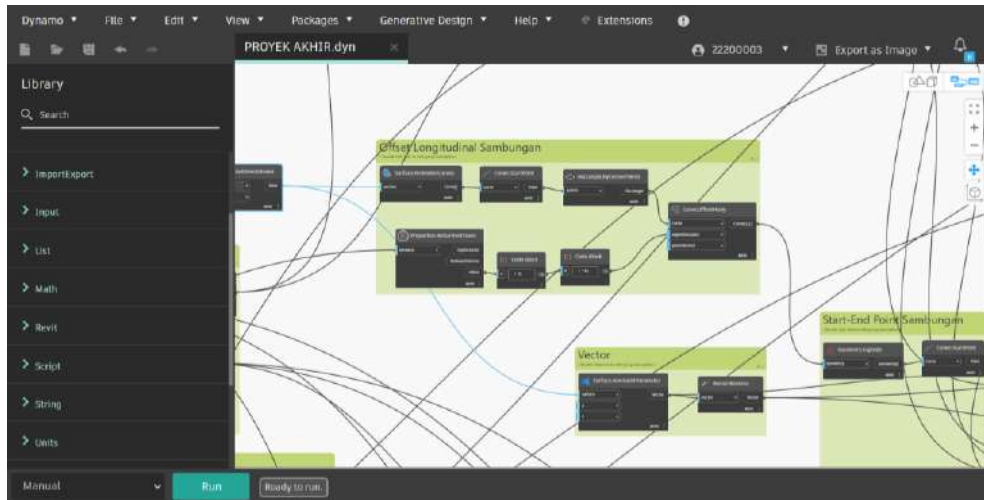
Lampiran B.c.3. Alur kerja balok
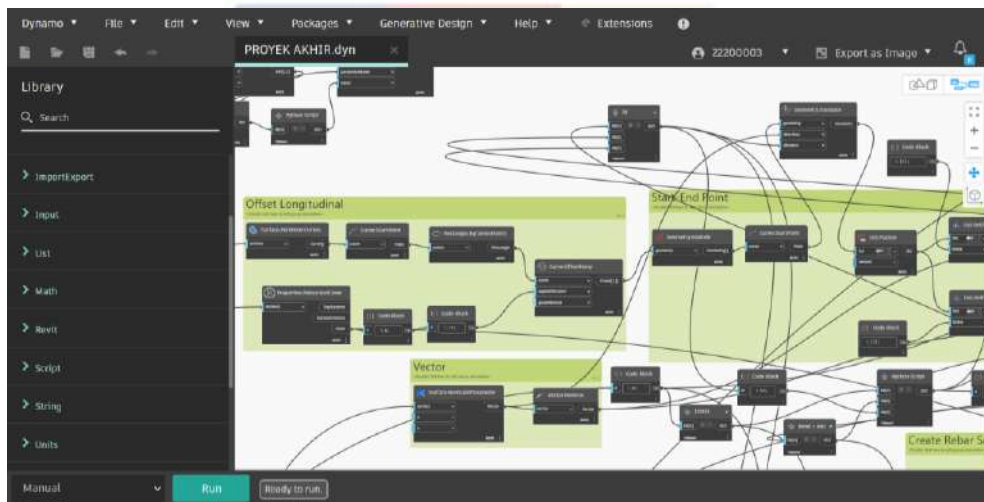
Lampiran B.c.4. Alur kerja balok
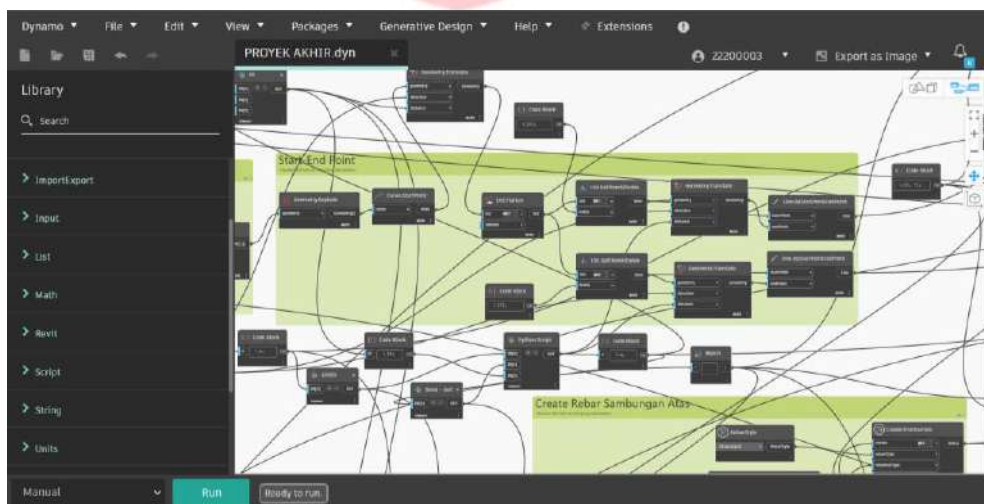
Lampiran B.c.5. Alur kerja balok

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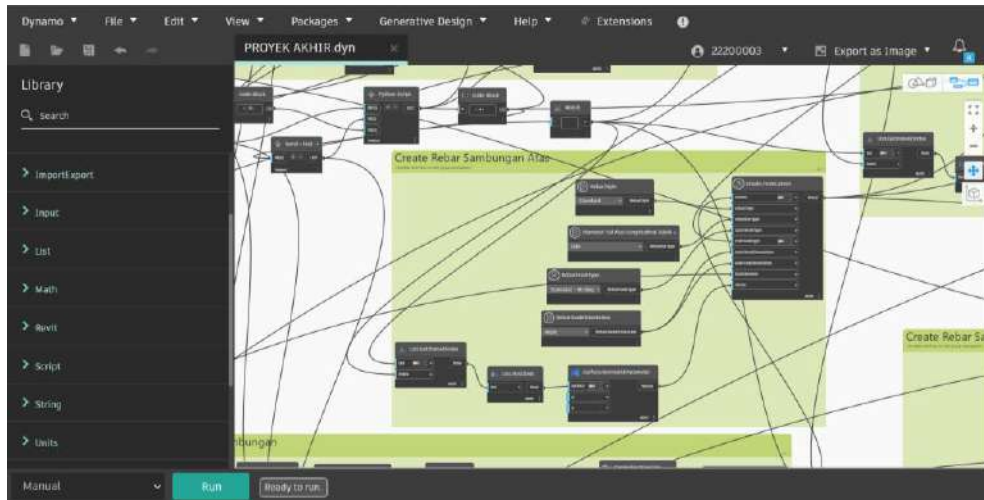
Lampiran B.c 6. Alur kerja balok
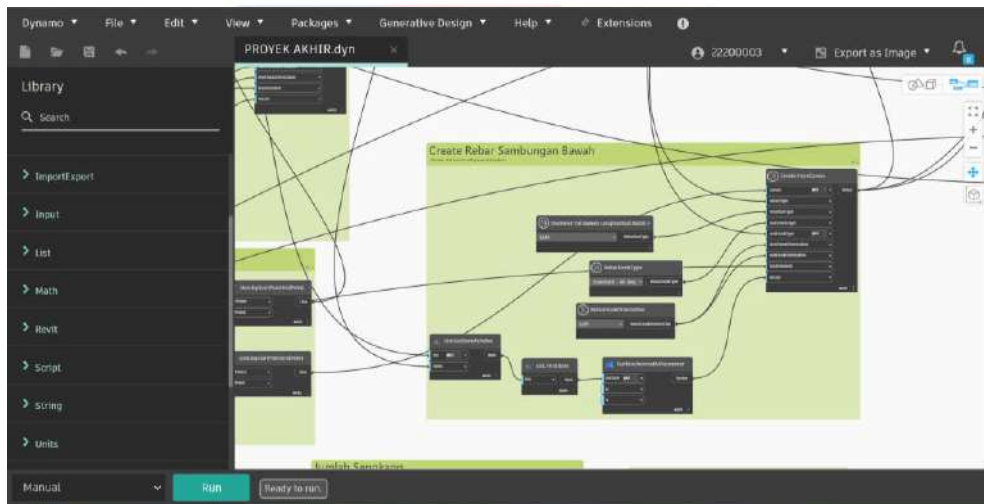
Lampiran B.c.7. Alur kerja balok
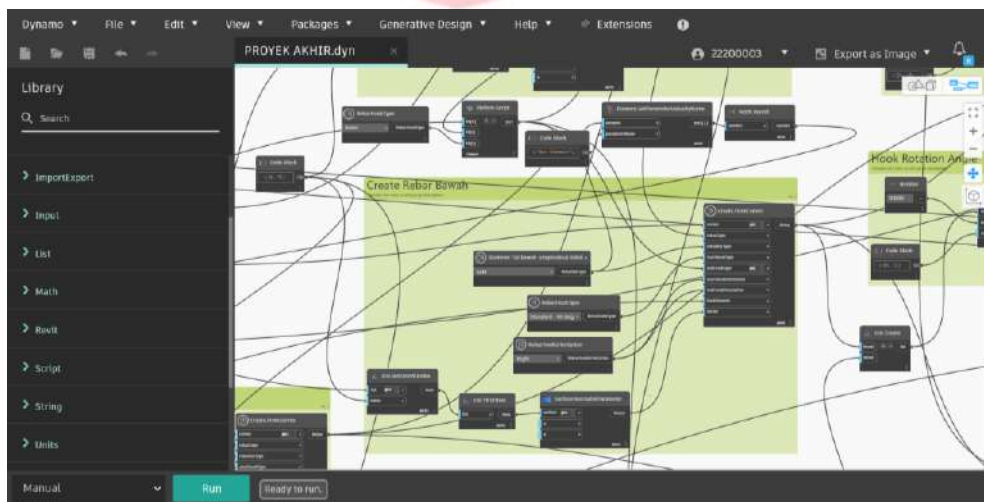
Lampiran B.c.8. Alur kerja balok

Lampiran B.c.9. Alur kerja balok
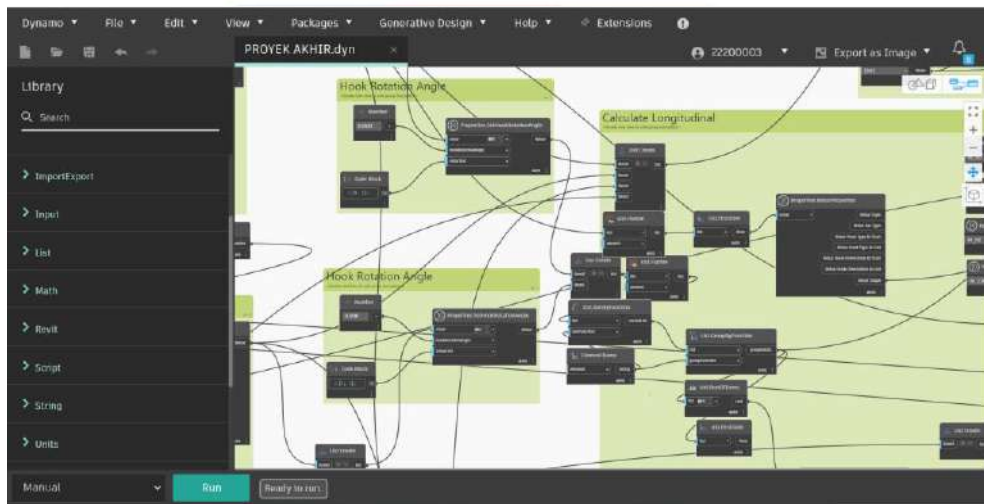
Lampiran B.c.10. Alur kerja balok
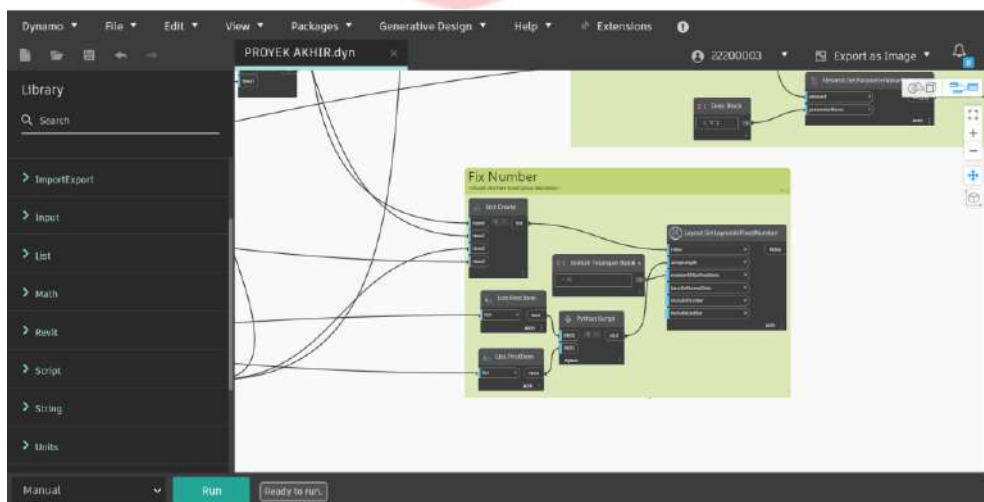
Lampiran B.c.11. Alur kerja balok

Lampiran B.c.12. Alur kerja balok
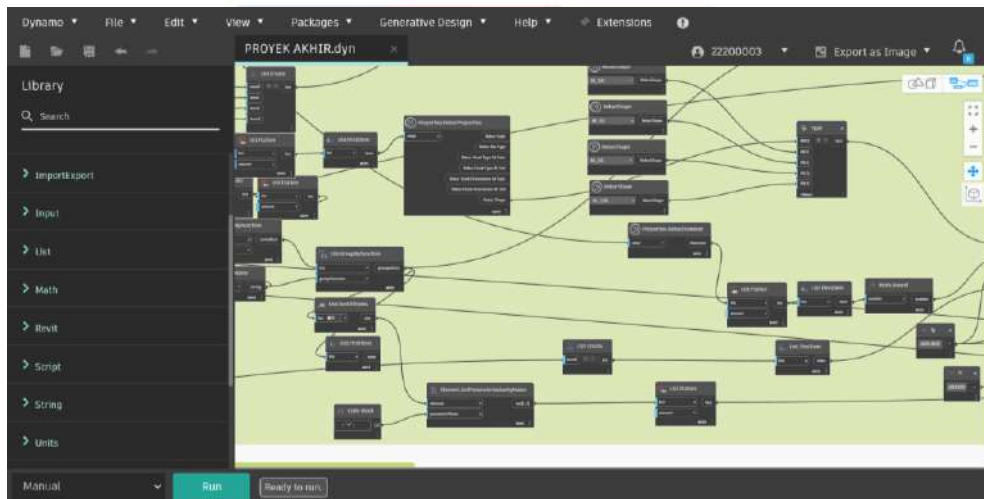
Lampiran B.c.13. Alur kerja balok
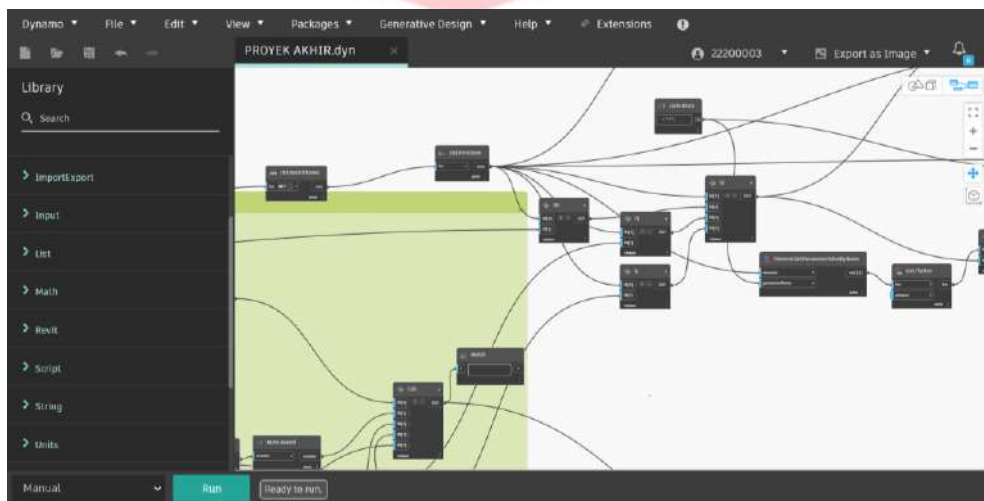
Lampiran B.c.14. Alur kerja balok
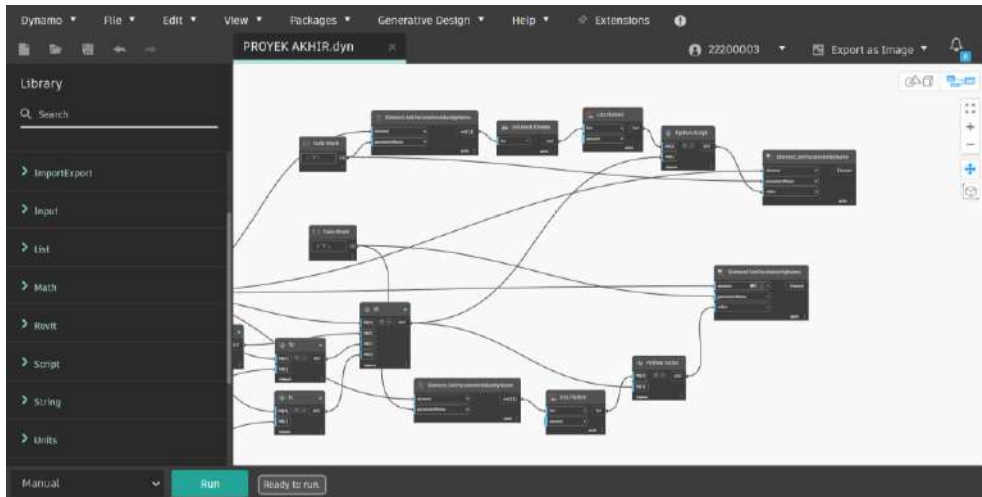
Lampiran B.c.15. Alur kerja balok
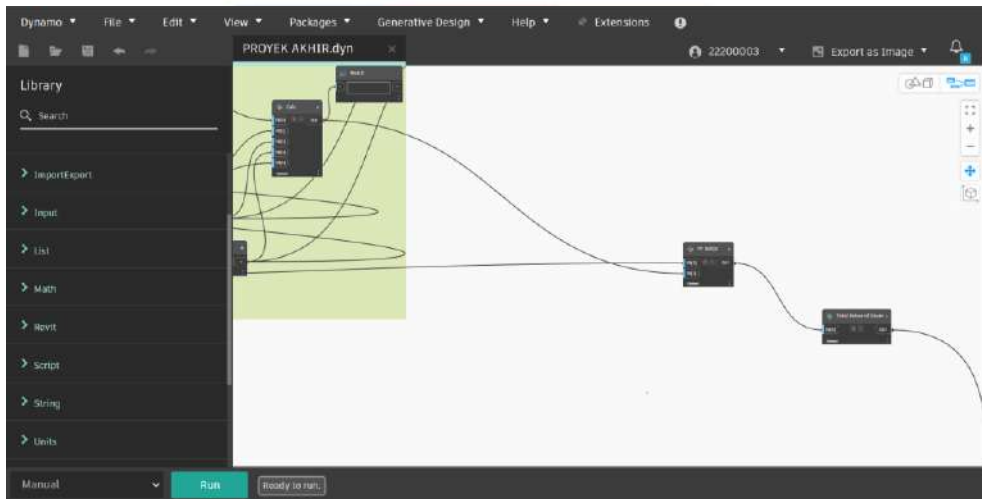
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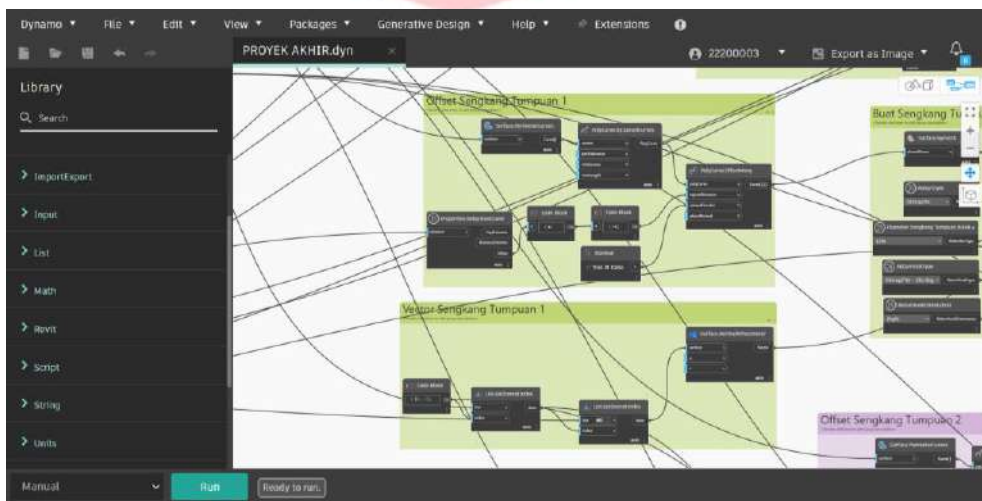
Lampiran B.c.17. Alur kerja balok

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Lampiran B.c.18. Alur kerja balok
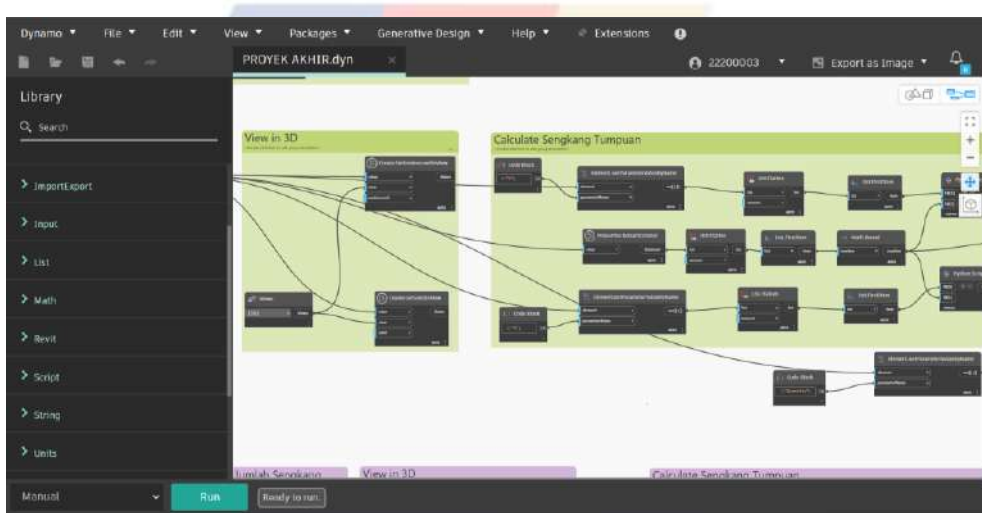
Lampiran B.c.19. Alur kerja balok
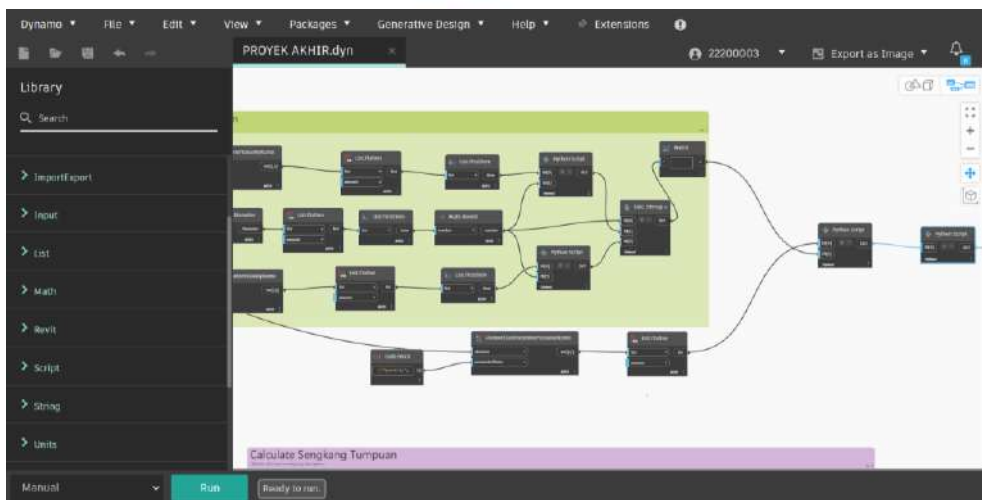
Lampiran B.c.20. Alur kerja balok
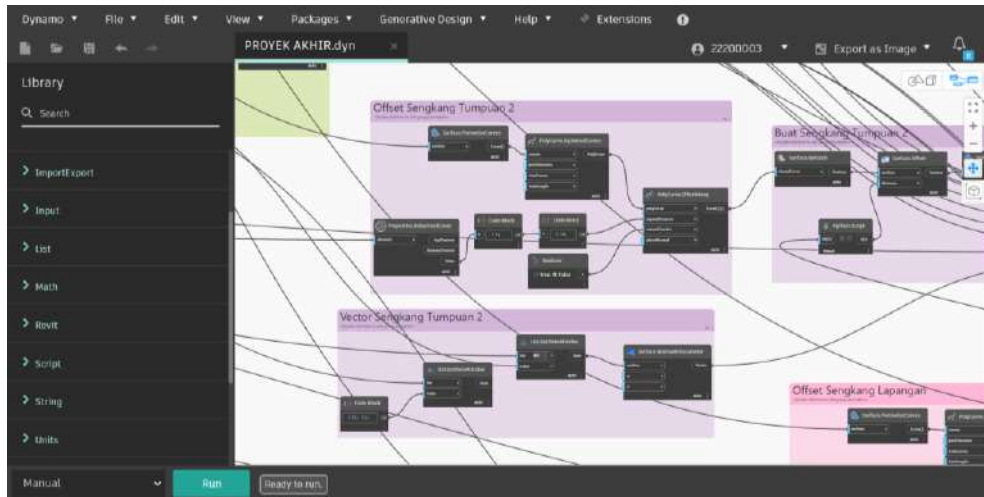
Lampiran B.c.21. Alur kerja balok
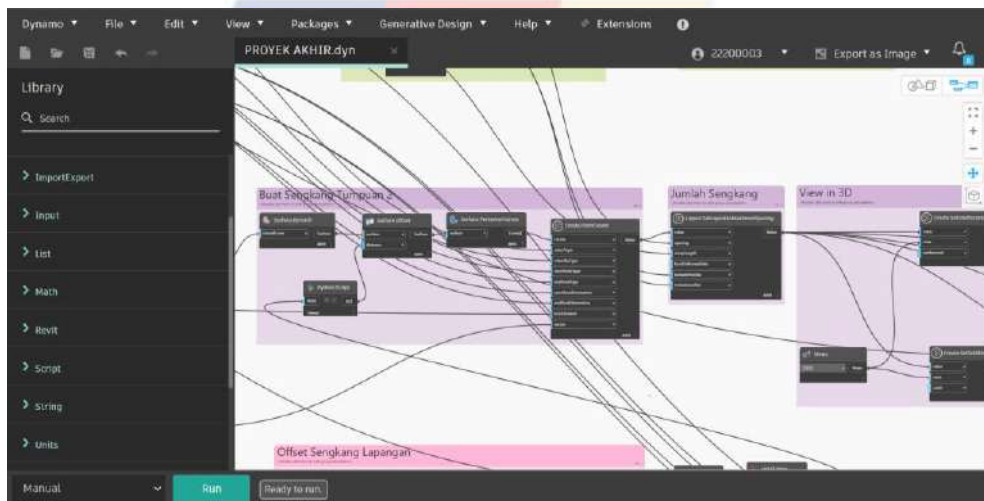
Lampiran B.c.22. Alur kerja balok
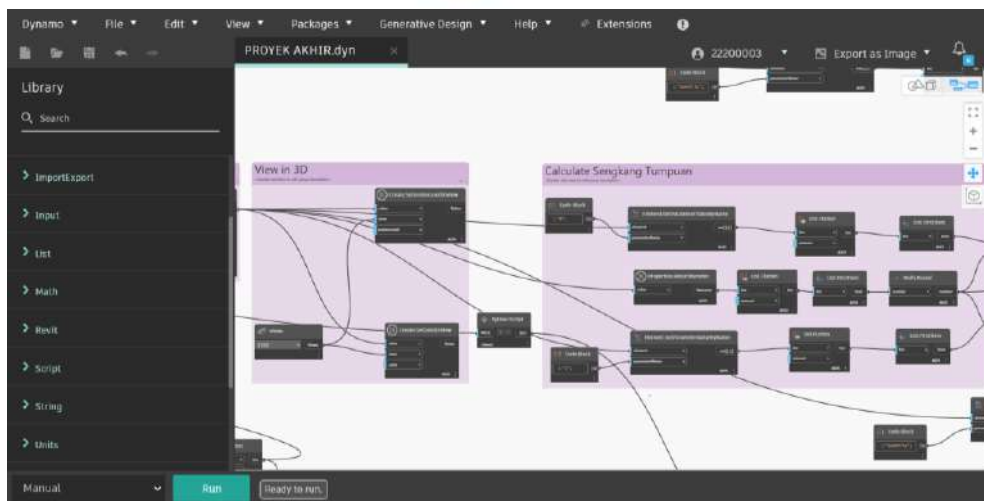
Lampiran B.c.23. Alur kerja balok
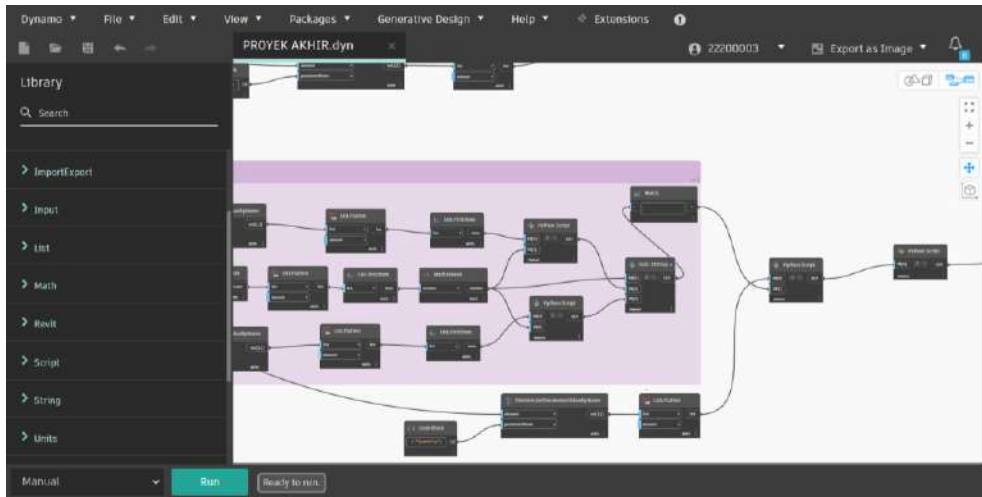
Lampiran B.c.24. Alur kerja balok
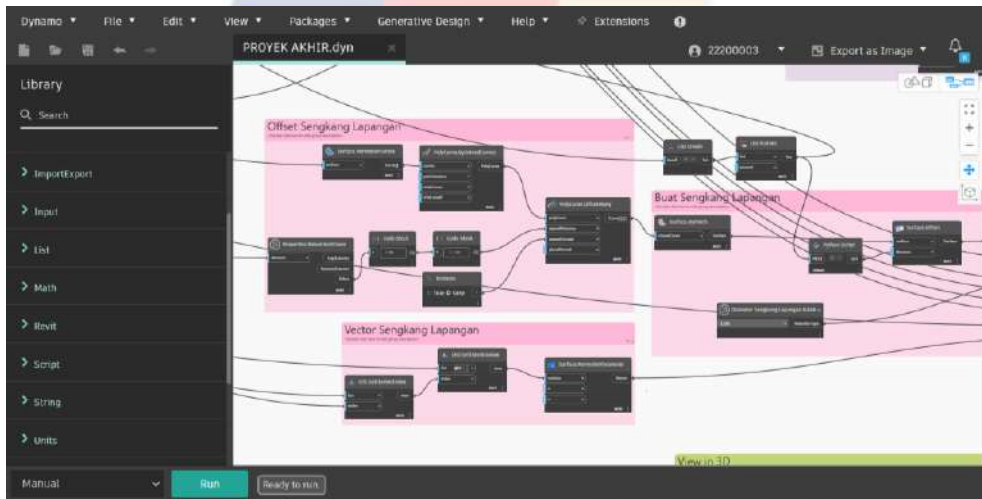
Lampiran B.c.25. Alur kerja balok
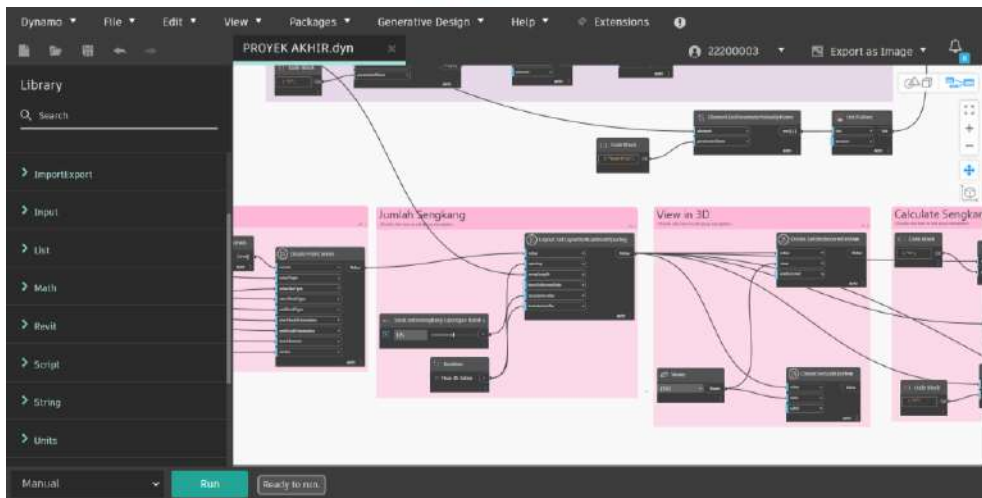
Lampiran B.c.26. Alur kerja balok

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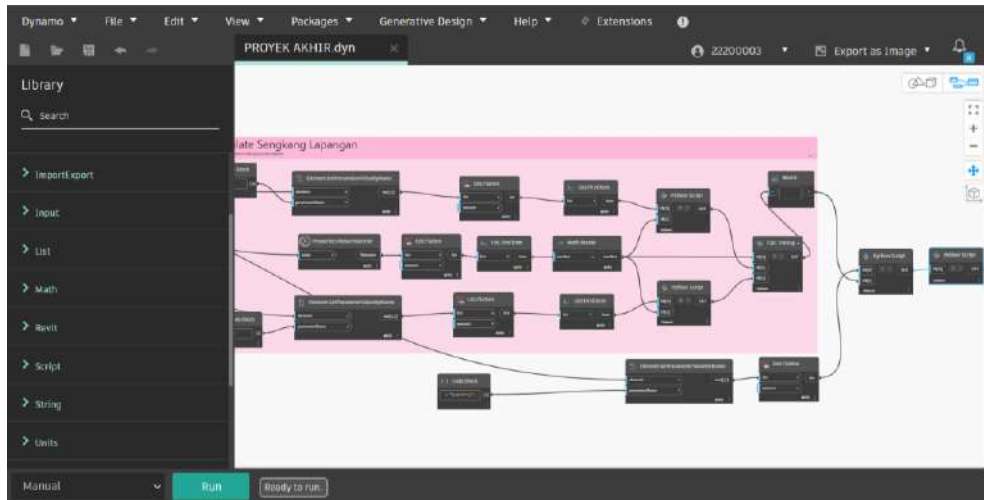
Lampiran B.c.27. Alur kerja balok
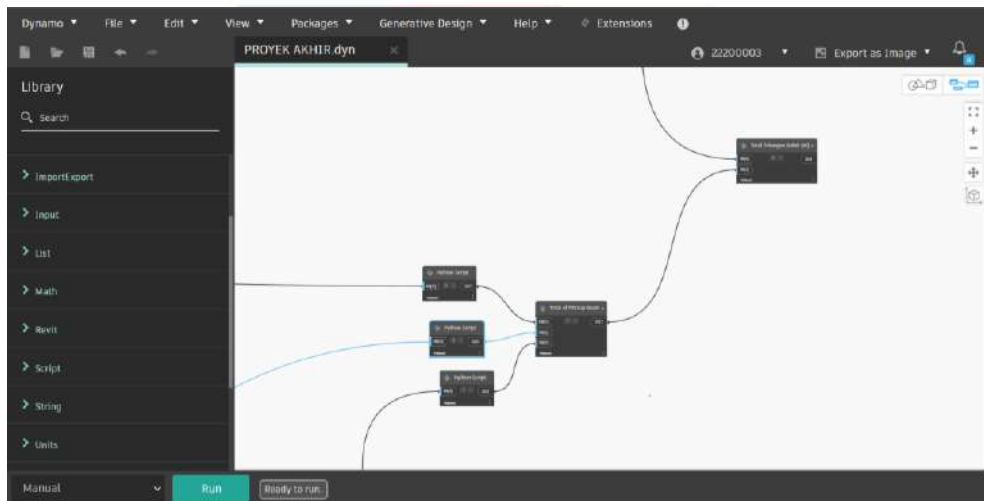
Lampiran B.c.28. Alur kerja balok

d. Alur Kerja Pelat Lantai
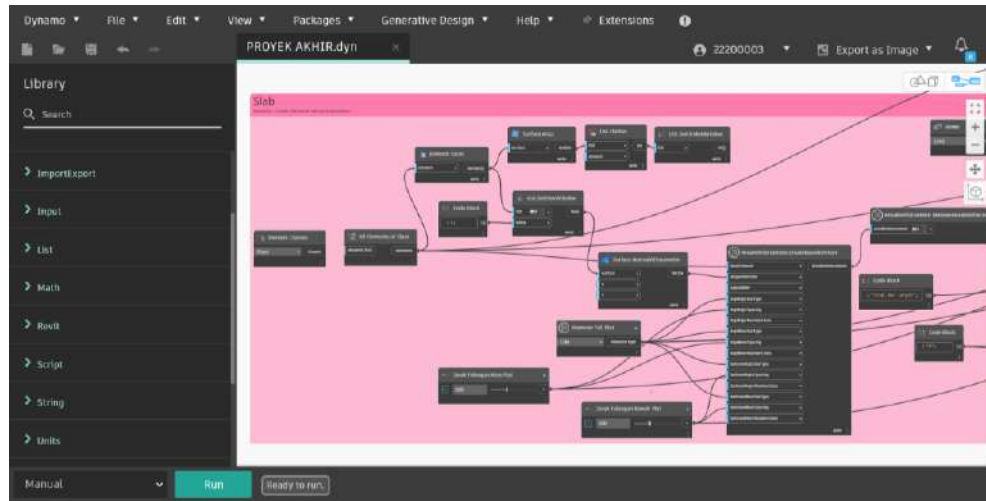
Lampiran B.d.1. Alur kerja pelat lantai
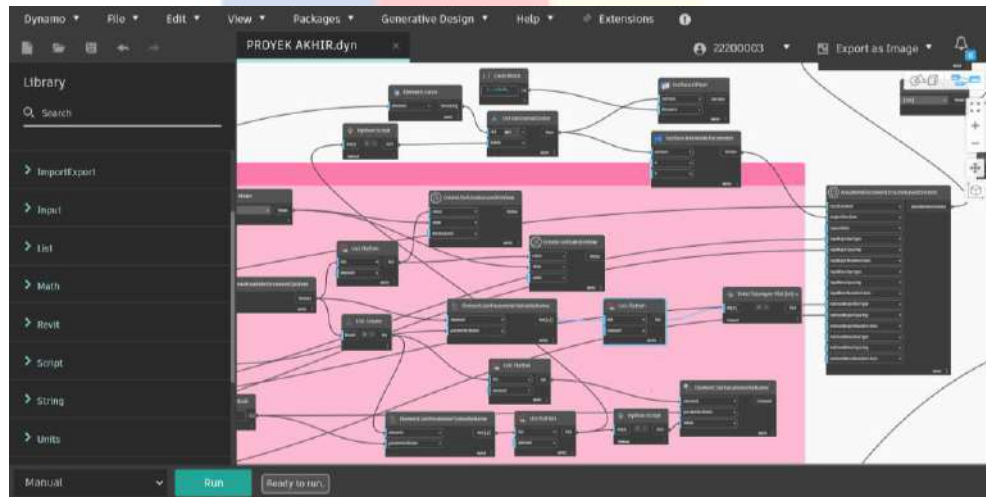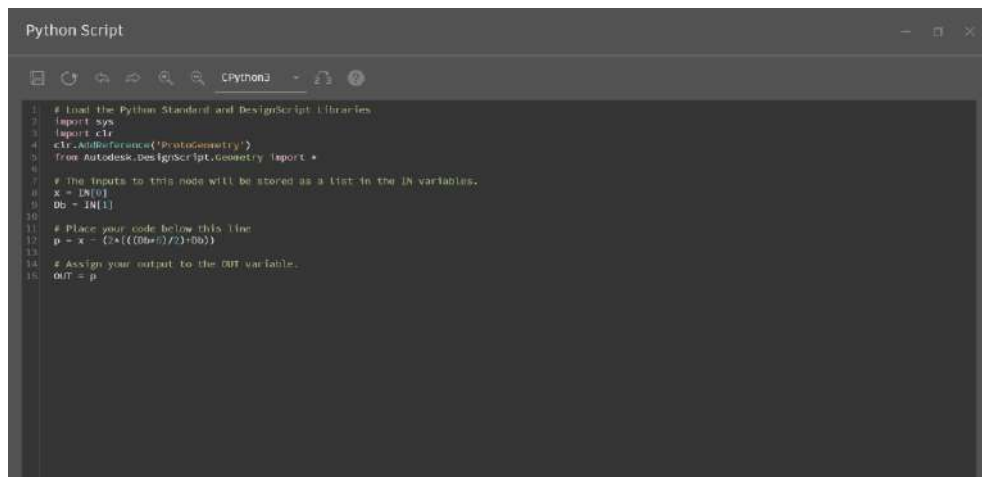
Lampiran B.d.2. Alur kerja pelat lantai
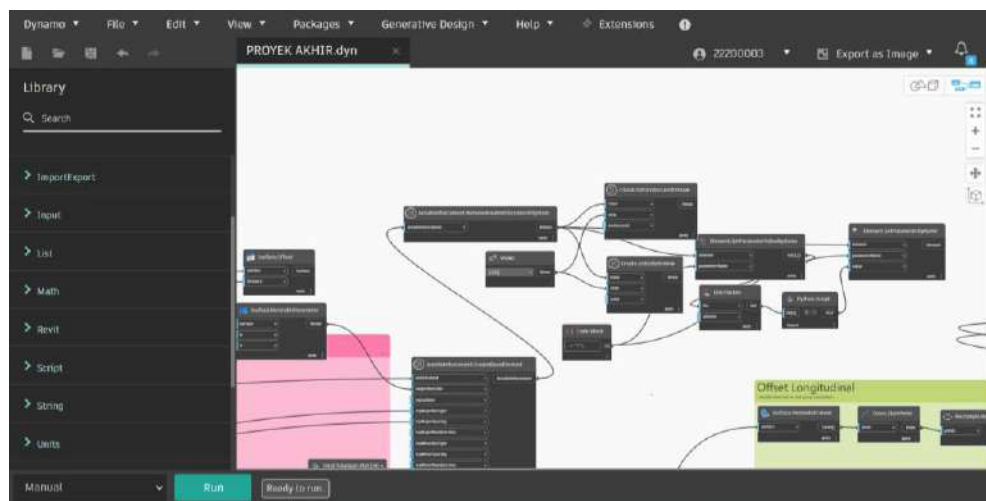
Lampiran B.d.3. Alur kerja pelat lantai

C. Skrip Python pada Dynamo

a. Skrip Python pada Fondasi
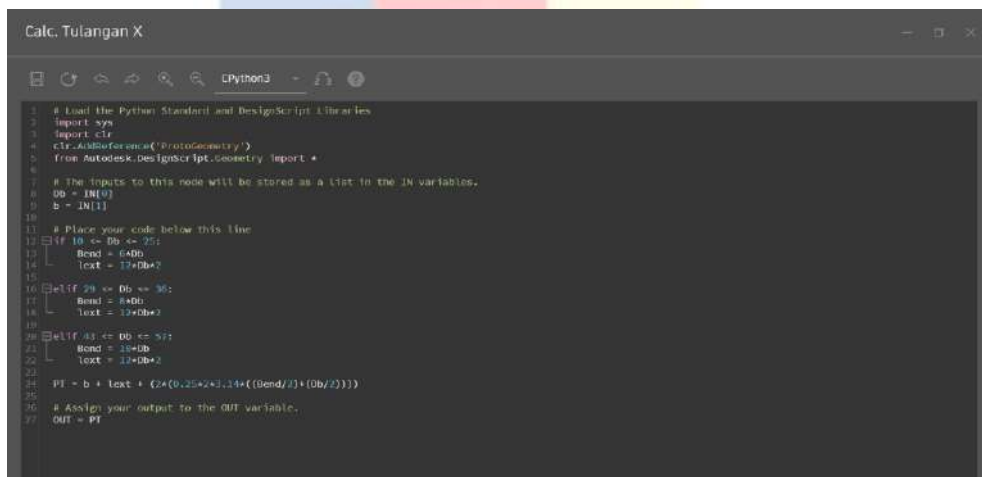
Lampiran C.a.1. Menghitung panjang menerus tulangan
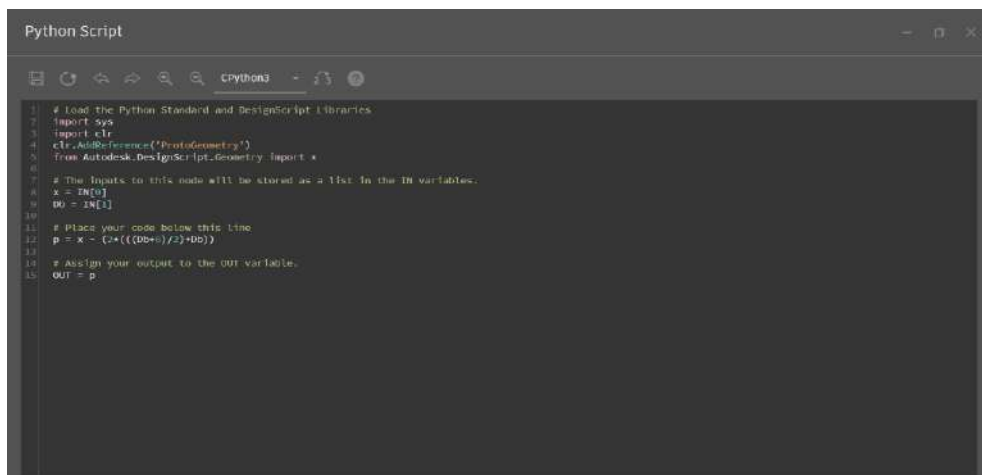
Lampiran C.a.2. Menghitung tulangan longitudinal arah x

Lampiran C.a.3. Menghitung panjang menerus tulangan

Lampiran C.a.4. Menghitung tulangan longitudinal arah y

Lampiran C.a.5. Menyeragamkan nilai dengan jumlah tulangan

Lampiran C.a.6. Menghitung total tulangan longitudinal atau sengkang

Lampiran C.a.7. Menghitung total tulangan fondasi

b. Skrip Python pada Kolom

Lampiran C.b.1. Menghitung jarak *offset* lantai 1

Lampiran C.b.2. Menghitung tinggi jarak *offset* lantai 2 dan 3

Lampiran C.b.3. Menghitung jarak *offset* lantai 4

Lampiran C.b.4. Menghitung tinggi lantai 1

Lampiran C.b.5. Menghitung tinggi lantai 2

Lampiran C.b.6. Menghitung panjang tulangan longitudinal

Lampiran C.b.7. Menentukan panjang tulangan jika lebih dari 12 m

Lampiran C.b.8. Menjumlahkan panjang kait dan panjang bengkokan

Lampiran C.b.9. Menentukan panjang tulangan jika lebih dari 12 m

Lampiran C.b.10. Menentukan panjang tulangan dikurangi selimut beton

Lampiran C.b.11. Menghitung panjang penyaluran

Lampiran C.b.12. Menyeragamkan nilai dengan jumlah tulangan

Lampiran C.b.13. Menghitung total tulangan

Lampiran C.b.14. Menghitung panjang sengkang

Lampiran C.b.15. Menyeragamkan nilai dengan jumlah tulangan

Lampiran C.b.16. Menghitung total tulangan sengkang

c. Skrip Python pada Balok

Lampiran C.c.1. Menghitung panjang penyaluran

Lampiran C.c.2. Menentukan panjang tulangan jika lebih dari 12 m

Lampiran C.c.3. Menghitung jumlah panjang kait dan panjang bengkokan

Lampiran C.c.4. Menentukan panjang bentang tulangan

Lampiran C.c.5. Menentukan panjang tulangan jika lebih dari 12 m

Lampiran C.c.6. Menentukan panjang bentang sengkang tumpuan

Lampiran C.c.7. Menentukan panjang bentang sengkang lapangan

Lampiran C.c.8. Menentukan panjang bentang sengkang tumpuan

Lampiran C.c.9. Menentukan bentang panjang tulangan

Lampiran C.c.10. Menghitung panjang menerus tulangan longitudinal

Lampiran C.c.11. Menghitung panjang sengkang

Lampiran C.c.12. Menyeragamkan nilai dengan jumlah tulangan

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Lampiran C.c.13. Menjumlahkan nilai tulangan

Lampiran C.c.14. Menghitung total panjang tulangan

Lampiran C.c.15. Menentukan jarak antartulangan

Lampiran C.c.16. Menentukan tipe tulangan longitudinal

Lampiran C.c.17. Menghitung panjang tulangan longitudinal

Lampiran C.c.18. Menghitung panjang tulangan longitudinal

Lampiran C.c.19. Mneghitung panjang tulangan longitudinal

Lampiran C.c.20. Menghitung panjang tulangan

Lampiran C.c.21. Menghitung total tulangan

Lampiran C.c.22. Menentukan diameter tulangan

Lampiran C.c.23. Menentukan nilai fy dan fc

Lampiran C.c.24. Menghitung panjang penyaluran

Lampiran C.c.25. Menentukan panjang tulangan

d. Skrip Python pada Pelat Lantai

Lampiran C.d.1. Skrip untuk memecah tulangan pelat jika panjangnya lebih

dari 12 m

Lampiran C.d.2. Menentukan panjang tulangan jika kondisi < atau > 12 m

Lampiran C.d.3. Menghitung total tulangan pelat

Lampiran C.d.4. Menentukan panjang tulangan sambungan pada pelat