

### definiowanie

literal	<code>make_graph_from_literal(1-2-3, 1-3)</code>	- for an undirected edge, -+ for directed (+ is the arrowhead)
adjacency matrix	<code>graph_from_adjacency_matrix(matrix_name, mode = "undirected")</code>	mode = "directed" or "undirected"
edgelist	<code>gr1&lt;-graph_from_edgelist(matrix_name, directed=FALSE)</code>	directed= "false" or "true" for a directed or non-directed graph

### atrybuty

list vertices	<code>V(graph_name)</code>
list edges	<code>E(graph_name)</code>
list degrees	<code>degree(graph_name)</code>
list degrees in oriented graph	<code>degree(graph_name, mode="in"/"out")</code>

### files

saving into file	<code>write_graph(graph_name, "file_name.graphml", format = "graphml")</code>
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### miary centralności wierzchołków

stopień	degree
stopień ważony	strength
pośrednictwo	betweenness
bliskość	closeness
centralność wektora własnego	eigen_centrality
PageRank	page_rank
ekscentryczność	eccentricity
współczynnik klastrowania	

### spójność

wyszukiwanie spójnych składowych	<code>components(graph_name, mode="weak")</code>	mode = "weak" or "strong"
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### rysowanie

rysowanie w edytorze	<code>plot(graph_name)</code>
rysowanie ...	<code>tkplot(graphname)</code>

### drawing add-ons

<code>edge.width = E(graph_name)\$weight</code>	
<code>edge.label=E(graph_name)\$weight</code>	
<code>edge.label.dist = 0.5</code>	
<code>vertex.color="green"</code>	
<code>vertex.shape = "square"</code>	
<code>vertex.size=8</code>	
<code>layout=layout_type(graph_name)</code>	<code>layout_in_circle, layout_with_kk, layout_with_fr</code>
<code>vertex.attribute_type</code>	<code>vertex.color, vertex.shape, vertex.size</code>
<code>edge_attr(graf1, "weight") &lt;- c(2,2,1,5,1,4,3,2,3,6,4,1,2,1,5,3,2,3,1)</code>	
<code>plot(graf1, edge.label = E(graf1)\$weight)</code>	

